Vancouver Senate

THE SEVENTH REGULAR MEETING OF THE
VANCOUVER SENATE
FOR THE 2019/2020 ACADEMIC YEAR

WEDNESDAY, 18 MARCH 2020
6:00 P.M.
ROOM 182, IRVING K. BARBER LEARNING CENTRE, 1961 EAST MALL

1. Call to Order and Territorial Acknowledgement – Mr J. Maximillian Holmes (information)

2. Minutes of the Meeting of 12 February 2020 – Mr J. Maximillian Holmes (approval) (docket pages 3-17)

3. Business Arising from the Minutes – Mr J. Maximillian Holmes (information)

4. Tributes Committee – Dr Sally Thorne
   Memorial Minute for Dr Robert Horne Lee, CM, OBC (approval) (docket pages 18-19)

5. Academic Building Needs Committee – Dr Michael Isaacson
   Presentation on Capital Project Planning & Development to Meet UBC’s Facility Needs – with Mr. John Metras, Associate Vice President Facilities (information)

6. Agenda Committee – Dr Paul Harrison
   Suspension of Rules 10 and 24 of the Rules and Procedures of Senate (approval) (docket pages 20-21)

7. Awards Committee – Dr Lawrence Burr
   New and Revised Awards (approval) (docket pages 22-29)

8. Curriculum Committee – Dr Peter Marshall
   Curriculum Proposals from the Faculties of Arts, Commerce & Business Administration, Graduate & Postdoctoral Studies, Land & Food Systems, and Allard Law (approval) (docket pages 30-51)
9. **Research and Scholarship Committee – Dr Paul Keown**

10. **Reports from the Provost – Dr Andrew Szeri**
    a) Designation of the BioProducts Institute as a Global Research Excellence Institute (approval) (docket pages 81-83)
    b) Update on UBC’s Response to COVID-19 (information)

11. **Other Business**
    Presentation of Certificates of Thanks to Student Members of Senate for the 2019-2020 Term – Dr Andrew Szeri (information)
VANCOUVER SENATE
MINUTES OF 12 FEBRUARY 2020

DRAFT

Attendance


Clerk: Mr C. Eaton

Call to Order

The Chair of Senate, Dr Santa J. Ono, called the sixth regular meeting of the Vancouver Senate for the 2019/2020 Academic Year to order at 6:02 pm.

Addition to the Agenda

The President allowed an addition to the agenda under Other Business: Candidates for Degrees.

Minutes of 12 February 2020

Philip Loewen
Richard Tees

That the Minutes of the Meeting of 22 January 2020 be adopted as corrected:

Corrections: Senator Tsiakos was present.

Approved

Business Arising from the Minutes
With respect to the motion approved under Other Business at the previous meeting, Senator Holmes said that in considering motions that relate to specific geographical areas we should be more mindful - in light of our inclusive action plan and other work on diversity - that things can be interpreted in a particular way if they target a specific areas.

**Remark’s from the Chair**

The President, Dr Santa J. Ono noted that UBC had recently opened the renovated and expanded Biological Science building. The facility provides a consolidated home for the undergraduate students and teaching faculty in UBC’s life sciences teaching programs. A key benefit of the new building is the ability to make new and unexpected connections across the life sciences disciplines, with the goal of enhancing and expanding teaching expertise and knowledge. The University was also pleased to open the Community Health and Wellbeing Cloud Innovation Centre and the In-Patient Pharmacy Practice Skills Centre.

Dr Ono advised that Since early January, a core working group has been assembled to oversee the execution of the pillars of the Climate Emergency declaration. He noted that actions in progress include: recruitment of new Climate Hub staff to help lead the process; establishment of the Climate Emergency Community Engagement Taskforce; assembly of critical communications and engagement support across campus; and content creation for toolkits to support conversations within and across academic departments, campus communities, and staff units.

**Admissions Committee**

Professor Carol Jaeger, Chair of the Senate Admissions Committee, presented.

**MASTER OF PUBLIC POLICY AND GLOBAL AFFAIRS**

Carol Jaeger Anthony Shepard

That Senate approve changes the revised Calendar entry on admission to the Master of Public Policy and Global Affairs program as set out in the attached, effective for entry to the 2020 Winter Session and thereafter.

*By general consent, the proposal was amended to strike “or more” from page 20.*

**2020-2021 ENROLMENT TARGETS**
Carol Jaeger  
Anthony Shepard  

That Senate approve and forward to the Board of Governors for approval the 2020-2021 enrolment targets for the Vancouver campus.

Awards Committee

The Chair of the Senate Awards Committee, Dr Lawrence Burr, presented.

AWARDS REPORT

See Appendix A: Awards Report

Lawrence Burr  
Julia Chai  

That Senate accept the awards as listed and forward them to the Board of Governors for approval; and that letters of thanks be sent to the donors.

Curriculum Committee

Dr Peter Marshall, Chair of the Senate Curriculum Committee, presented.

FEBRUARY CURRICULUM REPORT

See Appendix B: Curriculum Report

Peter Marshall  
Carol Jaeger  

That the new course codes, new courses, new programs, revision of calendar pages, revision of courses, revision of degree requirements, and revision of program be brought forward by the faculties of Applied Science, Arts, Forestry, Graduate and Postdoctoral Studies (Applied Science, Commerce and Business Administration, and Forestry), Allard Law, and Science be approved.
Dr Marshall briefly outlined the proposals.

Joint Report of the Admissions and Curriculum Committees

Dr Peter Marshall, Chair of the Senate Curriculum Committee, presented.

Program Option

Peter Marshall  
Dante Agosti-Moro  

That the Master of Business Administration and Master of Business Analytics Dual Degree Program Option degree program be approved.

Senator Marshall said that this would allow students to complete two programs quicker than they could separately.

Report from the Provost

The Provost, Dr Andrew Szeri introduced Vice-Provost Eich who, with permission of Senate, presented.

External Reviews

Dr Eich presented the external reviews on the following units reviewed in the 2018-2019 academic year:

- Allard School of Law: Master of Laws in Taxation
- Faculty of Applied Science: Department of Chemical and Biological Engineering, Department of Civil Engineering, Department of Mining Engineering
- Faculty of Arts: Department of Central, Eastern and Northern European Studies, Department of Classical, Near Eastern and Religious Studies, Department of Linguistics
- Faculty of Land and Food Systems
- Faculty of Medicine: Centre for Blood Research
- University Sustainability Initiative
- Vantage College

Dr Eich also updated Senate on those midterm reviews that were conducted:
Senator Harrison said we have seen great improvement in the content of these reviews in recent years. He asked for a summary of what was learned from the midterm reviews and if these could be included in the summary reports presented.

Dr Eich said that the mid-cycle reports aren’t governed by the same policy so they are just remitted to the Provost; however, we could review and revise the policy to have them be included.

Senator Tees congratulated the Provost’s office on the improved quality of the reviews and the mid-cycle reviews.

Senator Holmes noted that a common theme was increasing diversity of students and faculty in programs.

Senator Burnham said that another theme she found was a need for graduate student funding support.

Dr Eich said that we do have anonymized summaries of any issues that have arisen that he would be happy to share with the senator.

Senator Holmes said that this would be an important area for the new research committee to look into.

Senator Singh said that he too appreciated the mid-cycle reviews. He asked if we had mechanisms that could address issues if those reviews showed a lack of progress on a noted issue.

Dr Eich said that not systematically but that this could be done.
STUDENT EVALUATIONS OF TEACHING

Dr Eich presented the annual report on Student Evaluations of Teaching.

He noted that a total of 8,744 instructor ratings were submitted to the University, for 7,141 course sections in which the University Module Items were administered. This represents a 9.7% increase in the number of instructor ratings compared to 2017. Dr Eich noted that instructor ratings had been generally consistent over the past 5 years, while noting higher response rates and lower variability as the percentage of in-class submissions increase.

Senator Rygnestad-Stahl thanked Dr Eich for the report, noting that the in-person presentation made the written report’s statistical aspects more understandable.

Senator Coughtrie said that there is huge ketosis in the required questions. Given the controversy around section surveys, he asks how that impacts promotion and tenure matters.

Dr Eich said that it would be wrong to only consider one source in such decisions. We have other means such as in-class reviews by other lecturers to evaluate teaching as well.

Senator Singh thanked Dr Eich and the Centre for Teaching and Learning Technology (CTLT). He asked if we had data going back further to see if we are improving as a community on these questions.

Dr Eric said that we have generally been going up, but we are getting close to a functional ceiling effect so it will be difficult for increases to continue. We have data as far back as 2007 and the results are remarkably consistent.

Senator Holmes said it was concerning that we had low participation rates in smaller classrooms and higher in larger classes. He asked how we could ensure that more class time is used to complete evaluations.

Dr Eich said that heads and deans should encourage it as there is a robust relationship.

Senator Holmes said that we should look at how we go about advertising it. He asked if we had data on the demographics of respondents or if it was entirely anonymized.

With permission of Senate, Ms Marianne Schoeder spoke and said that the only demographic data collected was gender.

Senator Lo clarified that the minimums vary by class sizes.
Senator Burnham said that there are a lot of creative strategies to address minimum response rates.

Senator Gilbert said 25 years ago we used to dread McLean’s ratings as UBC always rated very poorly on how students felt about our teaching. He noted the development of CTLT as being integral in improving our skills as teachers. We should be proud of these advancements.

Senator Kindler also thanked and acknowledged colleagues in the educational leadership stream for the work as well as their advice, and support for the teaching of others.

Senator Averill added the CLTL grant support and the support shown by recent presidents for teaching at the University.

Senator Holmes said we should also thank the students for their feedback. He said that we should promote to faculty ideas on what they can do if they want to increase participation in their classes.

Senator Haffey said that the students should also encourage other students to participate.

Senator Chai said that there should be more incentives for faculties to take these evaluations seriously as some do not. She hoped that the working group could make changes to have these become more important.

Senator Harrison said one issue was evaluations being end of term evaluations. He found interim or mid-term evaluations much more useful as there was a chance for visible improvement. He wasn’t sure how much information there was on he suspected it was practiced often by some. He suggested that deans and heads should encourage it in more faculties.

Senator Agosti-Moro said that in commerce they did this and students were much more interested in those evaluations.

**Other Business**

**CANDIDATES FOR DEGREES**

Philip Loewen
Claudia Krebs

That the candidates for degrees as recommended by the faculties be granted the degree for which they were recommended, effective February 2020 and that a committee comprised of the Registrar, the dean of the relevant faculty, and the Chair of the Senate be empowered to make any necessary adjustments.
Adjournment

Seeing no other business, the meeting was adjourned at 6:55 pm.
Appendix A: Awards Report

NEW AWARDS – ENDOWED

Blue & Gold Centennial Indigenous Scholars Award
Renewable entrance awards totalling $4,000 have been made available through an endowment established by the University of British Columbia for domestic First Nations, Inuit, or Métis undergraduate students of Canada entering university directly from secondary school, or transferring from another post-secondary institution. Recipients are academically qualified and would not be able to attend UBC without financial assistance. In addition to academic merit, consideration is given to qualities such as leadership skills, community service and recognized extra-curricular achievement. Subject to continued academic standing, the awards will be renewed for a further three years of study or until the first undergraduate degree is obtained (whichever is the shorter period). The awards are made on the recommendation of the Centennial Scholars Entrance Award Committee. (First award available for the 2020/2021 winter session).

Franco and Suzann Corona Scholarship in Civil Engineering
Scholarships totalling $2,000 have been made available through an endowment established by Franco and Suzann Corona for outstanding domestic Bachelor of Applied Science students specializing in Civil Engineering. Franco Corona emigrated from Italy to Canada in 1967 where he met Suzann and worked on landmark development projects such as the Vancouver Shangri-La Tower. As philanthropists, Franco and Suzann are committed to contributing to their community and have championed many causes across Canada. They hope that this scholarship will help enable students, who will be building the future in Canada, to access as many opportunities as possible. The scholarships are made on the recommendation of the Department of Civil Engineering. (First award available for the 2020/2021 winter session).

Allan L. Edgeworth Bursary in Geological Engineering
Bursaries totalling $2,000 have been made available through an endowment established by Allan L. Edgeworth (B.A.Sc. 1973) for Bachelor of Applied Science students specializing in Geological Engineering. Preference will be given to 2nd year students. Mr. Edgeworth is a second generation UBC alumnus who spent his forty-five year career as an engineering consultant. He worked in the natural gas energy sector and served as Director of the Alberta Securities Commission, as well as for many publicly traded Canadian energy infrastructure companies. The bursaries are adjudicated by Enrolment Services. (First award available for the 2020/2021 winter session).

Roper Greyell LLP Bursary in Law
Bursaries totalling $4,000 have been made available through an endowment established by Roper Greyell LLP, along with matching funds from the University of British Columbia, for J.D. students in the Peter A. Allard School of Law. This bursary was established in celebration of the seventy-fifth anniversary of the law school at UBC. The bursaries are adjudicated by Enrollment Services. (First award available for the 2020/2021 winter session).

Dr. Judith Johnston Fellowship in Child Language
Fellowships totalling $16,000 have been made available through an endowment established by an estate gift from Dr. Judith R. Johnston (1943–2018) for outstanding Ph.D. students in the School of Audiology and Speech Sciences whose research focuses on child language or child language disorders. Conditional on the recipient’s continued satisfactory academic progress in their Ph.D.
program, the fellowship may be renewed for up to three years (for four years of total funding). Dr. Johnston was a Professor Emerita and former Director of the School of Audiology and Speech Sciences. She received many honours and awards for her contributions to the field of communication sciences and disorders. These included a Canadian 3M Teaching Fellowship, the Honors of the American Speech-Language and Hearing Association, and a lifetime achievement award from colleagues at the Symposium for Research in Child Language Disorders. The fellowships are made on the recommendation of the School of Audiology and Speech Sciences, in consultation with the Faculty of Graduate and Postdoctoral Studies. (First award available for the 2020/2021 winter session).

**Dr. Rimas Pakalnis Memorial Research Prize in Rock Mechanics**
Prizes totalling $1,200 have been made available through an endowment established in memory of Dr. Rimas Pakalnis (October 28, 1956–October 18, 2018) for graduate students studying Mining Engineering whose research performance or publication record are expected to have a significant impact on the field of rock mechanics. Dr. Rimas Pakalnis (B.Eng., M.A.Sc. 1982, Ph.D. 1986) was a Professor Emeritus in the Norman B. Keevil Institute of Mining Engineering. A highly respected proponent of Empirical Mine Design, Dr. Pakalnis was instrumental in the development of design methodologies for rock mechanics in underground mining operations. The prizes are made on the recommendation of the Norman B. Keevil Institute of Mining Engineering. (First award available for the 2019/2020 winter session).

**Dr. Christopher Wyatt Graduate Award in Dentistry**
Awards totalling $2,000 have been made available through an endowment established by Dr. Christopher Wyatt (B.Sc. 1981, D.M.D. 1986, M.Sc., Dip Pros) for graduate students in the Faculty of Dentistry with an interest in prosthodontics or geriatric dentistry. Dr. Wyatt is the Head of the Department of Oral Health Sciences, Chair of the Division of Prosthodontics & Dental Geriatrics, Director of Graduate Prosthodontics Program and Director of the Geriatric Dentistry Program in the UBC Faculty of Dentistry. His research is focused on prosthodontics and dental geriatrics. The awards are made on the recommendation of the Faculty of Dentistry, in consultation with the Faculty of Graduate and Postdoctoral Studies. (First award available for the 2020/2021 winter session).

**NEW AWARDS – ANNUAL**

**Xue Juan Cao Memorial Scholarship in Medicine**
Scholarships totalling $2,000 have been made available annually through a gift from Anna Zhang in memory of her grandmother Xue Juan Cao (1925–2018) for outstanding students enrolled in the M.D. program. Preference will be given to students with an interest in working in a remote or rural community. Xue Juan Cao was born in Tianjin, China, and worked as a manager and designer at a clothing company for over thirty years. She dedicated her life to helping communities in need, donating money, clothing and food to families from rural China. Xue Juan visited UBC during a trip to Vancouver in 1992, and the campus left a lasting impression on her. The scholarships are made on the recommendation of the Faculty of Medicine. (First award available for the 2020/2021 winter session).

**Go Global Pathfinder International Student Award**
Awards of up to $5,000 each have been made available annually for international students from any faculty who face barriers to participating in Go Global programming. Students who receive the Go Global Pathfinder Award will not be eligible to receive other Go Global awards toward the same
exchange opportunity. The awards are made on the recommendation of Go Global. (First award available for the 2019/2020 winter session).

**Graduate Studies Completion Award in Educational Studies**
Awards totaling $6,000 have been made available annually through a gift from Dr. Shauna Butterwick (B.S.N. 1978, M.A. 1987, Ed.D. 1993) for M.A., Ed.D. and Ph.D. students in the Department of Educational Studies who are in the final stages of completing their thesis or dissertation, who have demonstrated outstanding academic achievement and received limited funding assistance to finish their degree. Financial need may be considered. Dr. Butterwick taught at UBC for twenty-five years and is a Professor Emeritus in the Department of Educational Studies. In 2017 she received the CASAE/ACEEA Lifetime Achievement Award from the Canadian Association for the Study of Adult Education in recognition of her exceptional contributions to the field of adult education in Canada. The award is made on the recommendation of the Department of Educational Studies in consultation with the Faculty of Graduate and Postdoctoral Studies. (First award available for the 2020/2021 winter session).

**Mr. Naotaka Ide Memorial Scholarship in Medicine**
Scholarships totalling $2,000 have been made available annually through a gift from Noriko Ide in memory of her husband Naotaka Ide (1937–2019) for outstanding students enrolled in the M.D. program. Preference will be given to a student with an interest in neurodegenerative disease research. Mr. Ide was an international patent attorney for Toyota for most of his career. He was also an engineer and a professional piano player. He suffered from dementia later in life and wished to give back to the research community through this scholarship. The scholarships are made on the recommendation of the Faculty of Medicine. (First award available for the 2020/2021 winter session).

**Ken James Memorial Bursary**
Bursaries totalling $5,500 have been made available annually through a gift from Lewis James (B.Sc. 1970, M.S.) in memory of his father, Ken James (1917–1993), for undergraduate students who are permanent residents of Canada. Ken was born in Lismore, New South Wales, Australia. He graduated from New England University College in Armidale, New South Wales in 1941 before immigrating to British Columbia. He was an accomplished musician who played the guitar, clarinet and recorder. This bursary was established to help make Canadian higher education more accessible to permanent residents and to encourage them to successfully earn their degrees. The bursaries are adjudicated by Enrolment Services. (First award available for the 2020/2021 winter session).

**Mary Anne McWaters Bursary in Education**
Bursaries totalling $25,000 have been made available annually through a gift from Mary J. Anne McWaters (B.A. 1946, B.Ed. 1949) for students enrolled in the Bachelor of Education program. The bursaries are adjudicated by Enrolment Services. (First award available for the 2020/2021 winter session).

**PREVIOUSLY APPROVED AWARDS WITH CHANGES IN TERMS OR FUNDING SOURCE**

**Endowed Awards**

4435 – George E. Loveseth Award in Geological Sciences
Rationale for Proposed Changes
The description has been revised to broaden the candidate pool; as discussed with University Counsel this amendment to the award description is within the stated purpose of the endowment, which is to support awards for undergraduate students in Geological Sciences. The Department of Earth, Ocean and Atmospheric Sciences has approved the revised description.

Current Award Description
Awards totalling $4,000 have been endowed by George E. Loveseth (B.A.Sc. 1958) to support and recognize undergraduate students registered in the final year of Geological Engineering or Honours Geology. The awards are made on the recommendation of the Department of Earth and Ocean Sciences.

Proposed Award Description
Awards totaling $4,000 have been endowed by George E. Loveseth (B.A.Sc. 1958) to support and recognize undergraduate students registered in the final year of Geological Sciences, with a preference for those in the final year of Geological Engineering or Honours Geology. The awards are made on the recommendation of the Department of Earth, and Ocean and Atmospheric Sciences.

Annual Awards

1049 – Phillips, Hager & North Scholarship in Finance

Rationale for Proposed Changes
The donor would like to update the name of the scholarship to clarify that the scholarship is funded by the Phillips, Hager & North Research Centre and not the investment services firm Phillips, Hager & North.

Current Name: Phillips, Hager & North Scholarship in Finance
Proposed Name: Phillips, Hager & and North Centre for Financial Research Scholarship in Finance
Proposed Award Description
No change.

5147 – Go Global Pathfinder Award
Rationale for Proposed Changes
Go Global will be establishing two Pathfinder awards, one for domestic students and one for international students. The description has been revised to reflect that the award is only for domestic students.

Current Award Description
Awards of up to $5,000 each have been made available annually for students from any faculty who face barriers to participating in Go Global programming. Students who receive the Go Global Pathfinder Award will not be eligible to receive other Go Global awards toward the same exchange opportunity. The awards are made on the recommendation of Go Global. (First award available for the 2019/2020 winter session).

Proposed Award Description
Awards of up to $5,000 each have been made available annually for domestic students from any faculty who face barriers to participating in Go Global programming. Students who receive the Go Global Pathfinder Award will not be eligible to receive other Go Global awards toward the same exchange opportunity. The awards are made on the recommendation of Go Global. (First award available for the 2019/2020 winter session).
Appendix B: Curriculum Report

FACULTY OF APPLIED SCIENCE
Revised degree requirements
Bachelor of Applied Science > Chemical Engineering or Chemical and Biological Engineering
Revised course
CHBE 352 (4) Transport Phenomena II
Revised course
CHBE 370 (3) Fundamentals of Sustainable Engineering

FACULTY OF ARTS
New minor
Jewish Studies
New course code
MES (Middle Eastern Studies)
New courses
ASIA 210 (3) Traditions of Yoga; ASIA 321 (3) Celebrity Culture in Chinese Societies; MES 300 (3)
The Middle East: Critical Questions and Debates; TIBT 300 (3) Classical Tibetan I; TIBT 301 (3)
Classical Tibetan II
Revised calendar pages
Bachelor of Arts > Academic Concession; Bachelor of Fine Arts > Academic Concession; Bachelor of Media Studies > Academic Concession

FACULTY OF FORESTRY
New program
Bachelor of Science in Forest Bioeconomy Sciences and Technology (BEST) Co-op Program
New courses
BEST 310 (3) Co-operative Work Placement I; BEST 311 (3) Co-operative Work Placement II; BEST 312 (3) Co-operative Work Placement III; BEST 410 (3) Co-operative Work Placement; BEST 411 (3) Co-operative Work Placement IV; BEST 412 (3) Co-operative Work Placement V; CONS 488 (6)
Contemporary Forestry and Conservation in China; UFOR 330 (3) Environmental Justice and Urban Green Equity; UFOR 420 (3) Ecology of Urban Green Infrastructure; HGSE 370 (3) Introduction to Resilience Theory in Community; HGSE 371 (3) Re-Storying History: Indigenous Perspective; HGSE 372 (3) Language and Cultural Continuity; HGSE 373 (3) Community Planning and Development for Resilience; HGSE 374 (3) Community Resilience Seminar

PETER A. ALLARD SCHOOL OF LAW
New courses
LAW 200 (3) Indigenous Settler Legal Relations; LAW 271 (3) Introduction to Public Law and the Charter; LAW 291 (2) Aboriginal and Treaty Rights; LAW 347 (2-3) d Federalism; Law 393 (3) Green Rights and Warrior Lawyers; LAW 403 (3) Principles of Sentencing.

FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES
Applied Science
New course
APPP 510 (1.5/3) d Topics in Engineering and Health Leadership
Commerce and Business Administration
New course
BAFI 550 (1.5) Fundamental Finance
Forestry
New course
**UFOR 520 (3)** Ecology of Urban Green Infrastructure

**FACULTY OF SCIENCE**

New courses

- **BIOL 370 (3)** Principles of Muscle Physiology and Energetics;
- **BIOL 371 (3)** Principles of Neurobiology I;
- **BIOL 372 (3)** Principles of Neurobiology II;
- **GEOB 302 (3)** Paleoecology: Lessons for the Anthropocene;
- **GEOB 303 (3)** Tropical Ecosystems in a Changing World

Revised program

Combined Honours: Biophysics
6 March 2020

To: Vancouver Senate

From: Tributes Committee

Subject: Memorial Minute for Robert Horne Lee, CM, OBC

The Tributes Committee has prepared memorial minutes for the following individual:

Dr. Robert Horne Lee, CM, OBC,

Motion: That Senate approve the Memorial Minute for Dr. Robert Horne Lee, CM, OBC, that it be entered into the Minutes of Senate, and that copies be sent to the family of the deceased.

Respectfully submitted,

Dr. Sally Thorne, Chair
Senate Tributes Committee
Dr. Robert Horne Lee, CM, OBC

The Senate Tributes Committee wishes to pay their deepest respects towards Chancellor Emeritus Robert Horne Lee, who died 19 February 2020 after a lifetime of community service, strong ties to his alma mater, and business success.

Robert Horne “Bob” Lee was born Vancouver on 25 June 1933 to Bick and King Choon Lee. His parents operated a restaurant in Chinatown where Lee worked. Lee graduated from King Edward High School and completed a Bachelor of Commerce degree from the then UBC School of Commerce in 1956. He met his wife of 62 years, Lily Lee (BSN’56) while at UBC. Their four children all also graduated from UBC. Long interested in business and property development, Lee co-founded Wall Financial Corporation in 1996 and established Prospero Group in 1979. Over his career, he served on numerous corporate boards, including Canadian National Railways, the BC Telephone Company, Wall financial Corporation and Crown Life.

From 1985 to 1990 Lee was a member of the UBC Board of Governors and from 1993 to 1996 served a member of the Senate and Board as UBC’s 14th Chancellor. After completing his term as Chancellor, he remained actively involved in UBC in a wide range of informal supportive capacities. Beyond his tremendous contribution to UBC, Lee’s history of community support included B.C.’s Children’s Hospital, the B.C. Paraplegic Association, the Canadian National Institute for the Blind, Mount St. Joseph Hospital and the Rick Hansen Man-in-Motion Foundation. He also served on the boards of the UBC Foundation, Vancouver Port Authority, the Vancouver Police, and the Vancouver Foundation. In 1996, the University Senate granted him an honorary doctor of Laws in recognition of his tremendous service to UBC and the broader community.

The Robert H. Lee Alumni Centre and the Robert H. Lee Graduate School are named in recognition of his support to his alma mater, and the Robert H. Lee YMCA and the Robert and Lily Lee Family Community Health Centre are named in recognition of his support to the broader community. In addition to his generosity in both time and financial support to UBC, Lee’s most lasting impact may well be his visionary development and support for UBC Properties Trust, which to date has generated over $1.7 dollars towards UBC’s endowment and is expected to generate over $4 billion overall.

Fondly known as “Mr. UBC” to our community, Robert H. Lee will be remembered for his generosity, integrity, and kindness. His positive impact upon this community and his care for his alma mater will be felt in perpetuity. To his family and friends, the Senate and the University of British Columbia expresses its condolences and thanks.
To: Senate

From: Senate Agenda Committee

Re: Suspension of the Rules and Procedures of Senate to Facilitate Remote and Expedited Decision Making Due to COVID-19

Date: 9 March 2020

The Senate Agenda Committee has met recently to discuss the evolving COVID-19 situation. First, the Committee thanks the many health care professionals across B.C., Canada and the world who are working tirelessly to combat COVID-19 and assist those who have fallen ill. The Committee also thanks those at UBC for their continued work during this challenging time and our students, faculty and staff who are supporting one another.

The Committee notes that an update on UBC’s response to COVID-19 is on the Senate agenda and would ask that more general comments be held until that agenda item; this memorandum and its recommendations are focused on facilitating academic decision making should public health authorities further advise or direct against large group gatherings, which may include meetings of the Senate. Presently, they have advised against gatherings of more than 250 people for events; Senate meetings tend to have an attendance of no more than 100.

The Rules and Procedures of Senate prohibit remote attendance at meetings except in limited circumstances related to individual medical accommodations. While the Senate does have an email approval mechanism, it is presently limited for routine business and thus requires both unanimous consent, and a 7-day period for consideration. The Committee expects that for most individual and urgent situations, faculties and officers of the University will address matters using their discretionary powers under existing academic regulations. There are however, potential decisions that have broad, systemic, or longer-reaching impacts that may require the input and/or approval of Senate. To allow for those decisions to be made when in-person meetings may not be possible, the Senate Agenda Committee is recommending that two Rules of Senate be suspended (in the form of the new language being substituted) until the end of this calendar year. The first change, to Rule 10, would be to allow for remote meetings of Senate and its committees by all senators. The second change would temporarily change the threshold for approval of matters via email from the current unanimous consent to two/thirds in favour, and also shorten the time required for email approval of matters from 7 days to 72 hours. Both measures are temporary; however, as this is a continually evolving situation, that end date may need to be revisited in the fall. The Agenda Committee has asked faculties to review and revise their own rules around remote attendance and electronic voting as well, as for our larger faculties, the 250 person threshold could conceivably be crossed by extraordinarily good attendance, and that threshold may potentially be lowered.

The Senate agenda Committee recommends as follows:

That Rules 10 and 24 of the Rules and Procedures of Senate be suspended until 31 December 2020 and be replaced by the following amended text during that time:
10: In cases where a member cannot attend meetings of Senate or its committees in person for academic or workplace accommodation reasons, the Chair of Senate or the relevant committee shall permit their remote attendance and voting through electronic means acceptable to the Secretary. Members so attending will be considered present for all purposes.

24: In the event of a regularly-scheduled Senate meeting being cancelled, or if an extraordinary need for Senate approval exists between regularly scheduled meetings, the Agenda Committee may elect to have business it considers to be routine but time-sensitive to be considered via email under the procedures set out in this section.

a. The motion in question shall be sent via email by the Secretary to every Senator, and should the Agenda Committee not consider it a matter needing to be considered in camera, shall be posted to a web site designated by the Secretary.

b. The email sent under Section 24 (a) shall specify the text of the motion to be considered for approval and include any necessary supporting documentation.

c. A matter sent out via email is approved if no more than 1/3rd of the total voting membership of the Senate send objections objections are sent to the Secretary within seven (7) days 72 hours of the email being sent.

d. If an objection is raised by any Senator sufficient objections are noted under Section 24 (c) the matter is not approved and shall be considered at the next meeting of the Senate as a normal item of business but shall not be considered a motion to reconsider the question or a renewal of the motion.

e. A motion approved under this section shall be reported by the Secretary at the next meeting of Senate under Reports from the Registrar.

f. All Senators shall specify one or more email address(es) for the purposes of email consideration of matters and shall apprise the Secretary of any changes to those addresses in a timely manner.

g. A change to or suspension of the Rules and Procedures shall not be considered under this section.

NB: Suspending the Rules and Procedures of Senate required a vote of 2/3rds in favour to be approved. New text is in bold, text to be removed is struck through.
18 March 2020

From: Senate Awards Committee

To: Senate

Re: New Awards and Changes to Existing Awards

The Senate Awards Committee recommends:

“That Senate accept the awards as listed and forward them to the Board of Governors for approval, and that letters of thanks be sent to the donors.”

NEW AWARDS – ENDOWED

Dr. Wilma Ethel Elias Scholarship in Chemistry
Scholarships totalling $7,200 have been made available through an endowment established by an estate gift from Dr. Wilma Ethel Elias (1925-2018) for female graduate students studying chemistry. Dr. Elias was the first woman to obtain a Ph.D. at UBC. The scholarships are made on the recommendation of the Department of Chemistry, in consultation with the Faculty of Graduate and Postdoctoral Studies. (First award available for the 2020/2021 winter session).

Kim-Bautista Award in Law
Awards totalling $1,200 have been made available through an endowment established by Nicco Bautista (B.A. 2010, M.A. 2013, J.D. 2013) and Maria Kim-Bautista (B.A. 2010, J.D. 2013) for students in the J.D. program who are the first in their family to attend law school and have demonstrated academic excellence and community service. Preference will be given to students who identify as Black, or as a person of colour. Financial need may be considered. Nicco Bautista and Maria Kim-Bautista immigrated to Vancouver as children, were both the first in their families to attend law school, and are now lawyers practicing in Vancouver. Nicco and Maria were actively involved in student leadership and community service during their time at UBC. They established this award to support law students with similar backgrounds to their own. The awards are made on the recommendation of the Peter A. Allard School of Law. (First award available for the 2020/2021 winter session).
Dr. Miguel A. Romero Sánchez Memorial Fellowship in Chemistry
A $15,000 fellowship has been made available through an endowment established by Dr. Miguel Angel Romero (Ph.D. 1990) in memory of his father Dr. Miguel Antonio Romero Sánchez (1925–1997) for an outstanding Ph.D. student in the Department of Chemistry. Preference will be given to a student with Mexican citizenship. Conditional on the recipient’s continued satisfactory academic progress the fellowship may be renewed for an additional year of study. Dr. Romero Sánchez was a prominent organic chemist in Mexico. He completed his undergraduate degree at the National Autonomous University of Mexico, his M.S. and Ph.D. in organic chemistry at Harvard University and a postdoctoral fellowship at Imperial College London. Dr. Romero Sánchez was the founder and first President of the Mexican Mineralogical Society and was awarded the Carnegie Museum of Natural History Mineralogical Award in 1992. The fellowships are made on the recommendation of the Department of Chemistry in consultation with the Faculty of Graduate and Postdoctoral Studies. (First award available for the 2020/2021 winter session).

NEW AWARDS – ANNUAL

Go Global International Education Community Field Experience Award
Awards valued up to $1,000 each have been made available for international Bachelor of Education students participating in recognized student activities through international practicum placements arranged by Go Global. The awards are made on the recommendation of the Go Global International Learning Programs in consultation with Enrolment Services. (First award available for the 2020/2021 winter session).

Go Global International Self-Initiated Research Award
Awards valued up to $2,000 each have been made available annually for international undergraduate or graduate students participating in recognized student activities through self-initiated international research placements arranged by Go Global. The awards are made on the recommendation of the Go Global International Learning Programs in consultation with Enrolment Services. (First award available for the 2020 summer session).

Go Global International Structured Undergraduate Research Program Award
Awards valued up to $2,000 each have been made available annually for international undergraduate students participating in recognized student activities through structured international research placements arranged by Go Global. The awards are made on the recommendation of Go Global International Learning Programs in consultation with Enrolment Services. (First award available for the 2020 summer session).
Liu Scholars Award
Awards of $2,000 each have been made available annually by the School of Public Policy and Global Affairs for Ph.D. students who have successfully completed a project with the Liu Scholars program. The awards are made on the recommendation of the School of Public Policy and Global Affairs, in consultation with the Faculty of Graduate and Postdoctoral Studies. (First award available for the 2020/2021 winter session).

Wayne Robertson, Q.C. Access to Justice Award
A $2,000 award has been made available annually through a gift from the Governors of the Law Foundation of British Columbia and the benchers of the Law Society of British Columbia in honour of Wayne Robertson, Q.C. for a second or third year J.D. student in good academic standing who through coursework or volunteerism has contributed significantly to increasing access to justice. Financial need may be considered. Wayne Robertson, Q.C., served as Executive Director of the Law Foundation of British Columbia from 2002 to 2019. He has devoted many volunteer hours to various community and non-profit organizations, serving as a board member for both the Canadian Crossroads International and Community Legal Assistance Society. This award was created in recognition of Wayne’s work to increase access to justice. The award is made on the recommendation of the Peter A. Allard School of Law. (First award available for the 2019/2020 winter session).

Ian Townsend-Gault Memorial Graduate Research Award in Law
A $2,000 award has been made available annually through a gift from friends and family in memory of Ian Townsend-Gault (1952-2016) for outstanding students in research-based graduate programs in the Peter A. Allard School of Law. Preference will be given to students conducting research in Asian law or international law. Ian Townsend-Gault was the Founding Director for the Centre for Asian Legal Studies at the Peter A. Allard School of Law, where he served as an Associate Professor. This academic award is made on the recommendation of the Peter A. Allard School of Law in consultation with the Faculty of Graduate and Postdoctoral Studies. (First award available for the 2020/2021 winter session).

UBC Emeritus College Award for Excellence in the Innovative and Creative Endeavors of Emeriti
One or more awards of $1,000 are offered annually by the UBC Emeritus College to celebrate excellence in the innovative and creative endeavors of Emeriti since attaining Emeritus status. Nominations for the award may be made by any Emeritus to the UBC Emeritus College Office. The first Award will be in 2020-2021.

Eligibility: All persons listed under ‘Emeritus Status’ in the UBC Vancouver Academic Calendar.
PREVIOUSLY APPROVED AWARDS WITH CHANGES IN TERMS OR FUNDING

SOURCE

Endowed Awards

1795 – Dental Undergraduate Society Award

Rationale for Proposed Changes
As approved at the Board of Governors meeting in February, the Terms of Reference for the Dental Undergraduate Society Award Endowment Fund was amended to include Dental Hygiene Students in the purpose of the fund, so that the award will now support both Doctor of Dental Medicine and Dental Hygiene students. When the award was established in 2003, the Dental Hygiene program had not been created. The faculty has requested that the award description be amended to include Dental Hygiene students, and that the word “externship” be removed from the description as it made the award difficult to adjudicate.

Current Award Description
Awards totaling $1,500 have been endowed by the Dental Undergraduate Society to recognize undergraduate D.M.D. students participating in an externship focused on volunteer dentistry in an underprivileged and underserved area. The award is made on the recommendation of the Faculty of Dentistry.

Proposed Award Description
Awards totaling $1,500 have been endowed made available through an endowment established by the Dental Undergraduate Society to recognize for undergraduate D.M.D. or D.H.D.P. students who have participated in an externship focused on volunteer dentistry program in an underprivileged and underserved area. The awards are made on the recommendation of the Faculty of Dentistry.

Annual Awards

5141 – Go Global International Community Field Experience Award

Rationale for Proposed Changes
As awards for international students who go on exchange are funded by International Student Initiative, to streamline the adjudication and administration of the their awards, Go Global has created separate, identical awards for international students and is revising their existing awards to be for domestic students.
Current Award Description
Awards valued up to $1,000 each are offered to domestic and international UBC Teacher Education students participating in recognized student activities through international practicum placements arranged by Go Global. The awards are made on the recommendation of the Go Global International Learning Programs in consultation with Enrolment Services.

Proposed Award Name: Go Global International Education Community Field Experience Award
Proposed Award Description
Awards valued up to $1,000 each are offered to have been made available annually for domestic and international UBC Teacher Bachelor of Education students participating in recognized student activities through international practicum placements arranged by Go Global. The awards are made on the recommendation of the Go Global International Learning Programs in consultation with Enrolment Services.

5143 – Go Global Self-Initiated Research Award

Rationale for Proposed Changes
As awards for international students who go on exchange are funded by International Student Initiative, to streamline the adjudication and administration of their awards, Go Global has created separate, identical awards for international students and is revising their existing awards to be for domestic students.

Current Award Description
Awards valued up to $2,000 each are offered to domestic and international UBC students participating in recognized student activities through self-initiated international research placements arranged by Go Global. Awards are made on the recommendation of the Go Global International Learning Programs in consultation with Enrolment Services.

Proposed Award Description
Awards valued up to $2,000 each are offered to have been made available annually for domestic and international UBC undergraduate and graduate students participating in recognized student activities through self-initiated international research placements arranged by Go Global. The Awards are made on the recommendation of the Go Global International Learning Programs in consultation with Enrolment Services.
6521 – Robert and Averil Kennedy Forestry Graduate Scholarship

Rationale for Proposed Changes
The award will now be funded through an endowment. The description has been updated to reflect the change in funding source and to follow current award description stylistic conventions.

Current Description:
A $6,000 scholarship is offered annually by Dr. Robert (Bob) and Averil Kennedy. The scholarship is awarded to a graduate student enrolled in a thesis based Master's program in the Faculty of Forestry and whose area of study is wood science. The scholarship may be given to the same recipient for a maximum of two years. Dr. Kennedy received his undergraduate degree from the State University of New York, a Master's degree from UBC and his PhD from Yale University. He dedicated his career to the advancement of wood behaviour through wood science research and teaching. Dr. Kennedy was Dean of the Faculty of Forestry from 1983 until his retirement in 1991 when he became Emeritus Professor. The award is made on the recommendation of the Faculty of Forestry in consultation with the Faculty of Graduate and Postdoctoral Studies.

Proposed Name: Robert and Averil Kennedy Family Forestry Graduate Scholarship in Forestry
Proposed Description:
A $6,000 scholarship is offered annually by Dr. Robert (Bob) and Averil Kennedy. Scholarships totalling $4,000 have been made available through an endowment established by the Kennedy family, friends and colleagues, along with matching funds from the Faculty of Forestry, in memory of Dr. Robert (Bob) Kennedy (1931-2019). The scholarship is awarded to a graduate student enrolled in a thesis-based Master's program in the Faculty of Forestry and whose area of study is wood science. The scholarship may be given to the same recipient for a maximum of two years. Dr. Kennedy received his undergraduate degree from the State University of New York, a Master's degree from UBC and his PhD from Yale University. He dedicated his career to the advancement of wood behaviour through wood science research and teaching. Dr. Kennedy was Dean of the Faculty of Forestry from 1983 until his retirement in 1991 when he became Emeritus Professor. The award scholarships are made on the recommendation of the Faculty of Forestry in consultation with the Faculty of Graduate and Postdoctoral Studies.

President’s Award for Distinguished Service by a UBC Emeritus

Rationale for Proposed Changes
The award will now be funded by the UBC Emeritus College. The description has been updated to reflect this.
**Current Award Description**
One or more awards of $1,000 are offered annually by the UBC Association of Professors Emeriti to UBC Emeriti who have, since attaining Emeritus status, displayed exceptional leadership or initiative in volunteer community service that benefits others in Canada or abroad. It is anticipated that the recipient will direct the Award to an organization, charity, or fund of their choosing. Nominations for the award may be made by any Emeritus to the Vice Provost’s Office, UBC.

Eligibility: All persons listed under ‘Emeritus Status’ in The UBC Vancouver Academic Calendar.

**Proposed Award Description**
One or more awards of $1,000 are offered annually by the UBC Association of Professors Emeriti UBC Emeritus College to UBC Emeriti who have, since attaining Emeritus status, displayed exceptional leadership or initiative in volunteer community service that benefits others in Canada or abroad. It is anticipated that the recipient will direct the Award to an organization, charity, or fund of their choosing. Nominations for the award may be made by any Emeritus to the Vice Provost’s Office, UBC.

Eligibility: All persons listed under ‘Emeritus Status’ in The UBC Vancouver Academic Calendar.

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**4501 – BC Association of Social Workers Prize**

**Rationale for Proposed Changes**
Students enter the Bachelor of Social Work program in third-year rather than first-year. The award description is being updated to reflect this. The adjudication body is being revised to reflect that the student selection is made by the School and not the Director. The funding language has been updated to follow current award language conventions.

**Current Award Description**
A $250 prize is offered by the British Columbia Association of Social Workers to an outstanding first year student in the School of Social Work, UBC Vancouver Campus. The award is made on the recommendation of the Director of the School.

**Proposed Award Description**
A $250 prize has been made available annually through a gift from the British Columbia Association of Social Workers to an outstanding first year student in the
4481 – Art Soregaroli Memorial Award

Rationale for Proposed Changes
This award will now be funded through an endowment. The award description has been revised to reflect the change in funding source.

Current Award Description
A $1,000 award is offered annually by family, friends and former students in memory of Dr. Art Soregaroli to a top-performing undergraduate student in Earth, Ocean and Atmospheric Sciences, with preference to a student enrolled in a 3rd or 4th-year mineral-deposit geology course. Art was a UBC alumnus and professor of Economic Geology. He would later go on to join the Geological Survey of Canada in the early 1970’s, serve as the Vice President at Westmin Resources, and end his career as the chief geoscientist for Teck Corporation. Art’s love of mineral collecting and travel took him and wife Rosalie to many exotic destinations in the years that followed. The award is made on the recommendation of the Department of Earth, Ocean and Atmospheric Sciences.

Proposed Award Description
Awards totalling $4,000 have been made available through an endowment established by family, friends and former students in memory of Dr. Art Soregaroli (1933-2017) for a top-performing undergraduate student in the Department of Earth, Ocean and Atmospheric Sciences, with preference to a student enrolled in a 3rd or 4th-year mineral-deposit geology course. Art was a UBC alumnus and professor of Economic Geology. He would later go on to join the Geological Survey of Canada in the early 1970’s, serve as the Vice President at Westmin Resources, and end his career as the chief geoscientist for Teck Corporation. Art’s love of mineral collecting and travel took him and wife Rosalie to many exotic destinations in the years that followed. The awards are made on the recommendation of the Department of Earth, Ocean and Atmospheric Sciences.
18 March 2020

To: Vancouver Senate

From: Senate Curriculum Committee

Re: March Curriculum Proposals (approval)

The Senate Curriculum Committee has reviewed the material forwarded to it by the faculties and encloses those proposals it deems as ready for approval.

The following is recommended to Senate:

**Motion:** “That the new courses, revision of degree requirements, and revision of parchment, be brought forward by the faculties of Arts, Commerce and Business Administration, Graduate and Postdoctoral Studies (Applied Science), Land and Food Systems, and Allard Law be approved.”

Respectfully submitted,

Dr. Peter Marshall, Chair

Senate Curriculum Committee
FACULTY OF ARTS

Parchment change
Inclusion of Majors to the Bachelor of Arts/Fine Arts/Music parchment

FACULTY OF COMMERCE AND BUSINESS ADMINISTRATION

New course
COMM 470 (3) Venture Capital

FACULTY OF LAND AND FOOD SYSTEMS

New course
APBI 462 (3) Conservation Agriculture and Biodiversity Monitoring

PETER A ALLARD SCHOOL OF LAW

Revised degree requirements
Juris Doctor>Peter A. Allard School of Law

FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES

Applied Science

New courses
MECH 500 (1-12) d Emerging Topics in Mechanical Engineering; MECH 515 (1-12) d Emerging Topics in Applied Mechanics; MECH 530 (1-12) d Emerging Topics in Applied Mechanics; MECH 540 (1-12) d Emerging Topics in Mechatronics, Manufacturing, Controls, & Automation; MECH 570 (1-12) d Emerging Topics in Thermo fluids; NAME 500 (1-12) d Special Topics in Naval Architecture and Marine Engineering
18 March 2020

To: Vancouver Senate

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Re: March Curriculum Proposals (approval)

The Senate Curriculum Committee has reviewed the material forwarded to it by the faculties and encloses those proposals it deems as ready for approval.

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Respectfully submitted,

Dr. Peter Marshall, Chair

Senate Curriculum Committee
TO: Senate Curriculum Committee
FROM: Gage Averill (Dean) Phone: (604) 822-3247
FAX: (604) 822-6607
DATE: February 12, 2020

RE: Change to Faculty of Arts UBC degree parchment to include Major/s

Please note that where Arts is mentioned it is to include the B.A., B.FA., and B.Mus. degrees.

BACKGROUND & RATIONALE

There are up to four possible lines available to describe the conferred degree on the parchment; currently, the Faculty of Arts utilizes only two (Bachelor of Arts – line 1 & Co-op Program – line 3). Students have expressed great interest in seeing, in addition to “Bachelor of Arts”, their major/s included on their parchments to showcase their specific field of study. Other UBC Faculties already display majors, and our students would also appreciate consistency across parchments. Arts is a large and diverse Faculty that offers students many fields of study and innumerable combinations of specializations. Students increasingly identify with their core discipline/s, which may include one or more major or honours programs.

The complexity of offerings and combinations, along with the length of some of our specializations has been a historical obstacle to including majors and ensuring that these could be captured coherently and accurately. Having now done work to confirm that the system can accommodate this change, we propose to move forward with the addition of majors (line 2).

STUDENT CONSULTATION RESULTS

There has been overwhelming support from the Arts Student Body in favour of changing the Arts degree parchments to include majors. Many Arts students were unaware of the current parchment policy detailing only “Bachelor of Arts” without listing their major(s); upon learning of the current policy, many students were dismayed and looked for a change. As a result, the Faculty of Arts Student Senator published a questionnaire that received over 1,400 student responses (approximately 10.4% of the Arts undergraduate population) and included students from across the Faculty’s various departments and programs. Of these
responses, 97.7% of students responded positively to the survey’s first question which asked whether or not they supported a change to include major/s on the parchment. Many of these students provided additional comments. The fundamental reasons cited by those in favour included:

- Students strongly identify with their major(s) and are proud of their studies in their chosen discipline/s.
- Including majors highlights the significant variation of offerings in the Faculty of Arts and better reflects the individual achievements that exist: i.e., a Computer Science major is very different from an Economics major, which is also very different from majors in History or Linguistics.
- Students often need to present parchments to government offices and future employers to verify their credentials. Students have highlighted the current parchments, which lack majors, as an obstacle to obtaining the NAFTA TN visa and other work permissions. Furthermore, concern was raised by students who did not want to present future employers with their full transcripts.

It is important to recognise that 31(2.2%) responses out of over 1,400, did not support this proposal. In one instance, the student felt the transcript already provided sufficient information and only one student explicitly noted that they would not want their major on the parchment. Ideally, the system would allow students to opt out (i.e., retaining a parchment that lists only Bachelor of Arts); however, this is not currently an option given the limitations with UBC’s current Student Information System. We hope that future Student Systems will allow an opt-out option, to accommodate all student preferences.

Based on direct student feedback provided, it is clear Faculty of Arts undergraduate students overwhelmingly support this proposal. Students who have devoted themselves to their studies want a graduation parchment that they can be proud of and that accurately reflects their accomplishments.

Given that UBC has the technical ability to include majors on parchments, including the diverse range of BA majors and combinations, this proposal would bring the Faculty of Arts in line with other Faculty practices and give students what they have been asking for.

**PROPOSAL**

The Faculty of Arts respectfully requests approval to have parchments use the available lines as follows:

Line 1: “Bachelor of Arts” (unchanged)
Line 2: Field of Study, as described below
Line 3: Other information, specifically “Co-operative Education Program” (unchanged)
Line 4: Unused (unchanged)
EXPLANATION

Line 2: Field of Study

Each Bachelor of Arts student graduates with a specialization/major, and some graduate with more than one specialization/major. (We do not intend to include minor specializations on the parchment.)

The proposed representation of the various types of primary specializations is shown in the table below.

<table>
<thead>
<tr>
<th>Primary Specialization Type</th>
<th>Appearance on Parchment Line 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
<td>Major in English</td>
</tr>
<tr>
<td>Combined Major</td>
<td>Combined Major in English and History</td>
</tr>
<tr>
<td>Honours</td>
<td>Honours in English</td>
</tr>
<tr>
<td>Combined Honours</td>
<td>Combined Honours in English and History</td>
</tr>
<tr>
<td>2 Majors</td>
<td>Major in English and Major in History</td>
</tr>
<tr>
<td>2 Majors, one is Honours</td>
<td>Honours in English and Major in History</td>
</tr>
</tbody>
</table>

Some B.A. students will have a second specialization which will be a Major or Honours in another Arts discipline. It is important that the parchment show each “type” of specialization (i.e. Major or Honours).

Examples would be:

- Major in Anthropology and Major in Philosophy,
- Honours in Economics and Major in Asian Area Studies

The second example demonstrates the need to include the “type;” if “Major” were omitted, the nature of the student’s studies could be misrepresented (i.e., “Honours in Economics and Asian Area Studies” would imply a double honours program).

Many of our majors have “emphases” (e.g. Geography [Human Geography]); we are not requesting that these be included (i.e., parchment would list: Major in Geography). The academic transcript would make clear the area of emphasis or particular program stream.

Order of the majors printed on the parchment would be based on the date that the student entered the major. For instance, if a student entered a major in Psychology in 2018W and then a second major in Linguistics in 2019W their parchment would read as follows: “Major in Psychology and Major in Linguistics”. Ordering majors by date is currently how UBC prints majors on student transcripts, and also how students are assigned to graduation processions. Students will not be allowed to select the order in which their majors appear on
their parchment; it is our understanding that this is the only option given the current UBC Student Information System.

Arts students can also be approved to complete one of many types of minor programs in addition to a primary specialization (sometimes even in addition to primary and secondary specializations). No request is being made to include minors on the parchment, because although such study is indicative of a student’s interests and accomplishments, it is not core to the Arts degree and it is acknowledged on the student’s transcript.

Lastly, no request is being made to allow students to request changes to previously printed parchments, in recognition of the difficulty this would create given specialization changes over time. This proposal requests that specializations be printed on Faculty of Arts parchment beginning in the academic year of approval and going forward.

Line 3: Other Information (Co-op)
To remain unchanged

Line 4: n/a (unused)
**UBC Curriculum Proposal Form**

**Change to Course or Program**

<table>
<thead>
<tr>
<th>Category: (1)</th>
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</thead>
<tbody>
<tr>
<td><strong>Faculty:</strong> Commerce</td>
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<tr>
<td><strong>Faculty Approval Date:</strong> 2019 Nov 26</td>
</tr>
<tr>
<td><strong>Effective Session (W or S):</strong> W</td>
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<tr>
<td><strong>Effective Academic Year:</strong> 2020</td>
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<tr>
<td><strong>Date:</strong> 2019 Sep 21</td>
</tr>
<tr>
<td><strong>Contact Person:</strong> Kin Lo</td>
</tr>
<tr>
<td><strong>Phone:</strong> 2-8430</td>
</tr>
<tr>
<td><strong>Email:</strong> <a href="mailto:kin.lo@sauder.ubc.ca">kin.lo@sauder.ubc.ca</a></td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

**COMM 470 (3) Venture Capital**

Theory and evidence concerning venture capital markets. Contracting, fundraising, and financing choice covered in depth, with the aim of catering to students looking to raise money for entrepreneurial ventures or to invest in entrepreneurial ventures.

**Pre-requisites:** One of COMM 370 or COMM 387

**Present Calendar Entry:**

**Type of Action:** Create new course.

**Rationale for Proposed Change:**

This course on Venture Capital has been successful offered as a pilot as COMM 386G.

- **Not available for Cr/D/F grading**
  (undergraduate courses only)

  (Check the box if the course is NOT eligible for Cr/D/F grading and provide the rationale for this below. Note: Not applicable to graduate-level courses.)

**Rationale for not being available for Cr/D/F:**

- Commerce courses are generally not offered for Cr/D/F.

- **Pass/Fail or Honours/Pass/Fail grading**

  (Check one of the above boxes if the course will be graded on a P/F or H/P/F basis. Default grading is percentage.)
**UBC Curriculum Proposal Form**  
**Change to Course or Program**

<table>
<thead>
<tr>
<th>Faculty:</th>
<th>Land and Food Systems</th>
<th>Date:</th>
<th>Aug 30, 2019</th>
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<tbody>
<tr>
<td>Department:</td>
<td>Applied Biology</td>
<td>Contact Person:</td>
<td>Juli Carrillo</td>
</tr>
<tr>
<td>Faculty Approval Date:</td>
<td>Oct 24, 2019</td>
<td>Phone:</td>
<td>604-827-5039</td>
</tr>
<tr>
<td>Session (W or S):</td>
<td>S</td>
<td>Email:</td>
<td><a href="mailto:juli.carrillo@ubc.ca">juli.carrillo@ubc.ca</a></td>
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<tr>
<td>Academic Year:</td>
<td>2020</td>
<td>URL:</td>
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</tr>
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</table>

**Proposed Calendar Entry:**

APBI 462 (3) Conservation Agriculture and Biodiversity Monitoring

Biodiversity indicators and basic monitoring methods. Sources of agroecosystem biodiversity, including plants, insects, soil invertebrates, and vertebrates. Proficiency in using techniques to measure key abiotic factors in the field.

**Prerequisites:** One of BIOL 300, GEOG 374, FRST 231, LFS 252. APBI 260 recommended.

**URL:**

N/A

**Present Calendar Entry:**

N/A

**Type of Action:**

Create new course

**Rationale for Proposed Change:**

This is a new course that was previously offered as a special topics course (APBI 490 920: Conservation Agriculture and Biodiversity Monitoring) in 2019, and fills a key gap on campus for training in biodiversity monitoring and conservation within agro-ecosystems.

There is currently no other intensive field-based course that provides similar opportunities in experiential learning, scientific training and skill development in real world biodiversity monitoring techniques and analysis. This course specifically focuses on skill development and discussions of current issues in biodiversity monitoring and conservation practices in agricultural systems; these topics and learning outcomes are not currently offered in any other faculties. Maximum number of students = 30, due to classroom (UBC Farm Yurt) size constraints.

- Not available for Cr/D/F grading  
  (undergraduate courses only)

(Check the box if the course is NOT eligible for Cr/D/F grading and provide the rationale for this below. Note: Not applicable to graduate-level courses.)
Rationale for not being available for Cr/D/F: The default is that undergraduate courses are offered for Cr/D/F unless there is a significant reason as to why it should not be so.

☐ Pass/Fail or ☐ Honours/Pass/Fail grading
(Check one of the above boxes if the course will be graded on a P/F or H/P/F basis. Default grading is percentage.)
**UBC Curriculum Proposal Form**

**Change to Course or Program**

<table>
<thead>
<tr>
<th>Category: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Faculty:</strong> Peter A. Allard School of Law</td>
</tr>
<tr>
<td><strong>Department:</strong> Peter A. Allard School of Law</td>
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<tr>
<td><strong>Faculty Approval Date:</strong> October 2019</td>
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<tr>
<td><strong>Effective Session (W or S):</strong> W</td>
</tr>
<tr>
<td><strong>Effective Academic Year:</strong> 2020</td>
</tr>
</tbody>
</table>

| **Date:** January 31, 2020 |
| **Contact Person:** Natasha Affolder |
| **Phone:** 604-822-0734 |
| **Email:** affolder@allard.ubc.ca |

**Proposed Calendar Entry:**

**Degree Requirements**

**Regular Program**

The Juris Doctor program requires a student to acquire a minimum of 92 credits in three Winter Sessions in the Allard School of Law. First year consists of compulsory courses totaling 32 credits. The second and third years (or upper years) consist of two Winter Sessions totaling 60 credits. Each Winter Session consists of two consecutive terms. Students may not enrol in more than 18 credits per term or 34 credits per Winter Session.

**Juris Doctor – program entry September 2020 or later**

In the first year, students must take the following compulsory courses:

1. Law 200 (Indigenous Settlor Legal Relations)
2. Law 211 (Contracts)
3. Law 221 (Criminal Law and Procedure)
4. Law 231 (Property Law)
5. Law 241 (Tort Law)
6. Law 261 (Transnational Law)
7. Law 271 (Introduction to Public Law and the Charter)
8. Law 281 (Legal Research & Writing)
9. Law 291 (Aboriginal and Treaty Rights)

In the upper years, students must take the following compulsory courses:

1. LAW 347 (Federalism)
2. LAW 372 (Administrative Law)
3. LAW 300 (Jurisprudence and Critical

**Present Calendar Entry:**

**Degree Requirements**

**Regular Program**

The Juris Doctor program requires a student to acquire a minimum of 92 credits in three Winter Sessions in the Allard School of Law. First year consists of compulsory courses totaling 32 credits. The second and third years (or upper years) consist of two Winter Sessions totaling 60 credits. Each Winter Session consists of two consecutive terms. Students may not enrol in more than 18 credits per term or 34 credits per Winter Session.

[continued below …]
4. LAW 468 (Ethics and Professionalism)

A student may not enrol in a course for which another subject is a prerequisite, unless the required course was taken and passed earlier. In special circumstances the Associate Dean, Academic Affairs, in consultation with the Faculty member teaching the subject, may waive this stipulation.

Seminar or Directed Research: A student must undertake, in either the second or third year, at least one independent research project and submit a substantial paper (or series of papers) embodying the results of this research. This obligation usually will be satisfied within a 3 credit seminar but students may fulfill this obligation by completing a project, for at least 3 credits, under LAW 493, 494, 495, or 496 (Directed Research).

Experiential Learning Credit Requirement: Students are required to complete one experiential course or program before graduation. This experiential requirement is met through successfully completing:
- a for-credit clinical program;
- a for-credit competitive moot; or
- one of the courses approved by the Associate Dean, Academic Affairs and the Faculty’s Curriculum Committee as having a substantial experiential component and listed on the Faculty’s Degree Requirements website.

The Experiential Learning Credit does not change the number of credits required for the J.D. degree.

Maximum Credits for Experiential Learning: Students are limited to a total of 20 credits of clinical offerings, competitive mooting, and Law 486 Law Review Credit. Students may not take more than two clinical offerings during their Juris Doctor program.

Juris Doctor – program entry September 2019 or earlier

In the first year, students must take the following compulsory courses:
1. Law 201 (Constitutional Law)
2. Law 211 (Contracts)
3. Law 221 (Criminal Law and Procedure)
4. Law 231 (Property Law)
5. Law 241 (Tort Law)
6. Law 251 (Public Law)
7. Law 261 (Transnational Law)
8. Law 281 (Legal Research & Writing)

In the upper years, students must take the following compulsory courses:

1. LAW 372 (Administrative Law)
2. LAW 459 (Business Organizations) - this course is not compulsory for students who commenced their Juris Doctor degree in September 2018 or later
3. LAW 300 (Jurisprudence and Critical Perspectives)
4. LAW 468 (Ethics and Professionalism)

A student may not enrol in a course for which another subject is a prerequisite, unless the required course was taken and passed earlier. In special circumstances the Associate Dean, Academic Affairs, in consultation with the Faculty member teaching the subject, may waive this stipulation.

Seminar or Directed Research: A student must undertake, in either the second or third year, at least one independent research project and submit a substantial paper (or series of papers) embodying the results of this research. This obligation usually will be satisfied within a 3 credit seminar but students may fulfill this obligation by completing a project, for at least 3 credits, under LAW 493, 494, 495, or 496 (Directed Research).

Experiential Learning Credit Requirement: Beginning with the entering class of 2018, students are required to complete one experiential course or program before graduation. This experiential requirement is met through successfully completing:

- a for-credit clinical program;
- a for-credit competitive moot; or
  - one of the courses approved by the Associate Dean Academic and the Faculty’s Curriculum Committee as having a substantial experiential component and listed on the Faculty’s Degree Requirements website.

The Experiential Learning Credit does not change the number of credits required for the J.D. degree.

Maximum Credits for Experiential Learning: Commencing for students entering second-year Law in September 2017, students are limited to a total of 20 credits of clinical offerings, competitive mooting, and Law 486 Law Review Credit.
Students may not take more than two clinical offerings during their Juris Doctor program.

**Business Law Concentration**
During the Juris Doctor program, students may undertake a range of courses (outlined below) that emphasize areas of law which are essential to the practice of business law. This cluster of courses constitutes the "Business Law Concentration." It is an optional program signaling that students have completed legal studies providing them with a solid theoretical, doctrinal, and practical education in business law.

**Business Law Concentration Requirements**
To complete a Business Law Concentration, students must complete 7 mandatory courses and an additional 6 credits from a list of optional courses, as designated by the Director of the Centre for Business Law and listed on the Faculty's website:

**Seven mandatory courses:**
- LAW 407 Taxation
- LAW 437 Commercial Transactions
- LAW 438 Secured Transactions
- LAW 451 Trust Law
- LAW 459 Business Organizations
- LAW 463 Securities Regulation
- LAW 466 Business Law Capstone

The Business Law Capstone is designed to draw together all the elements of the business law curriculum, in a practical manner. In order to undertake this course, students must have completed at least five courses from the Business Law Concentration, including Business Organizations (Law 459), Taxation (Law 407), Securities Regulation (Law 463) and other courses from the Concentration comprising at least 6 credits. This course is required for completion of the optional Business Law Concentration.

The Business Law Concentration constitutes approximately 50% of the total upper-year requirements to fulfill the J.D. Program and will be awarded if students complete and pass six mandatory courses in the Concentration and other courses in the Concentration comprising at least six credits.

**Other Courses for Credit in the Juris Doctor Program**
Students may, in their second and third years (which may include the Summer Sessions between first year, second year, and third year), take courses in other departments and schools of the University for 20 credits of clinical offerings, competitive mooting and Law 486 Law Review Credit; and students may not take more than two clinical offerings during their Juris Doctor program.

**Business Law Concentration**
During the Juris Doctor program, students may undertake a range of courses (outlined below) that emphasize areas of law which are essential to the practice of business law. This cluster of courses constitutes the "Business Law Concentration." It is an optional program signaling that students have completed legal studies providing them with a solid theoretical, doctrinal, and practical education in business law.

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Credit in the law school. Such courses may be credited for not more than 6 credits toward the second or third-year credit requirements, but shall not reduce the hours or credits in the winter sessions below the minimum requirement of 30 credits. Each student must receive advance permission to register in such courses from the Associate Dean, Academic Affairs, who will base their judgement on the relevance of the proposed course or seminar to the study of law or to a career in law and of the appropriateness of the proposed course or seminar in the light of the student's course of study in the law school. More information, including how to apply for permission to take a non-Law course can be found on the Allard Law website.

Part-Time Students
Ordinarily, part-time students must complete not less than 50% of the normal course load in each academic year. In first year, 50% of the normal course load is 16 credits. In the upper years, 50% of the normal course load is 14 to 17 credits.

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Load</th>
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<tbody>
<tr>
<td>First</td>
<td>16 credits</td>
</tr>
<tr>
<td>Upper</td>
<td>14 to 17 credits</td>
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Type of Action:
Revised degree requirements

Rationale for Proposed Change:
In October 2019 the Faculty of Law submitted new course proposals to Senate for approval. These courses will be mandatory for first year J.D. students commencing their studies in September 2020. Now that the courses have been approved by Senate, the degree requirements page of the calendar must be updated to reflect these changes.

Not available for Cr/D/F grading (undergraduate courses only)
N/A

Rationale for not being available for Cr/D/F: N/A

Pass/Fail or Honours/Pass/Fail grading
N/A
**UBC Curriculum Proposal Form**  
**Change to Course or Program**

| Category: 1 |
|---|---|
| **Faculty:** | Applied Science |
| **Department:** | Mechanical Engineering |
| **Faculty Approval Date:** | October 31, 2019 |
| **Effective Session (W or S):** | S |
| **Effective Academic Year:** | 2020 |
| **Date:** | September 27, 2019 |
| **Contact Person:** | Tony Hodgson |
| **Phone:** | 604-822-3240 |
| **Email:** | ahodgson@mech.ubc.ca |
| **URL:** | N/A |
| **Present Calendar Entry:** | N/A |
| **Type of Action:** | New Course |

**Rationale for Proposed Change:**  
Creating new “emerging topics” courses that reflect the different research clusters in the department to provide organization and clarity for students, and make transcript entries more meaningful and specific. MECH 500 (general category) will be used to capture future emerging areas beyond our current identified clusters.

In lieu of a sample syllabus, we have attached a supporting document to our proposal that outlines the purpose of the courses, as well as the department policy on course requirements, the approval process, and how information will be communicated to students.

☐ **Not available for Cr/D/F grading**  
*(undergraduate courses only)*  
(>Check the box if the course is NOT eligible for Cr/D/F grading and provide the rationale for this below. Note: Not applicable to graduate-level courses.)*

**Rationale for not being available for Cr/D/F:**  
The default is that undergraduate courses are offered for Cr/D/F unless there is a significant reason as to why it should not be so.
<table>
<thead>
<tr>
<th>Passed/Fail or Honours/Pass/Fail grading (Check one of the above boxes if the course will be graded on a P/F or H/P/F basis. Default grading is percentage.)</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

**URL:**
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**Present Calendar Entry:**
N/A

**Type of Action:**
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**URL:**
N/A

**Pass/Fail or Honours/Pass/Fail grading**
(Check one of the above boxes if the course will be graded on a P/F or H/P/F basis. Default grading is percentage.)

N/A

**Proposed Calendar Entry:**

MECH 515 (1-12) d Emerging Topics in Applied Mechanics
<table>
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<tr>
<td>MECH 530 (1-12) d Emerging Topics in Biomedical Engineering</td>
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</tr>
<tr>
<td>Rationale for Proposed Change:</td>
<td>Type of Action:</td>
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<tr>
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<table>
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<th>URL:</th>
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<tbody>
<tr>
<td>MECH 570 (1-12) d Emerging Topics in Thermofluids</td>
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<tr>
<td><strong>Email:</strong> <a href="mailto:ahodgson@mech.ubc.ca">ahodgson@mech.ubc.ca</a></td>
</tr>
</tbody>
</table>

| URL: |
| N/A |

| Present Calendar Entry: |
| N/A |

| Type of Action: |
| New Course |

| Rationale for Proposed Change: |
| The Naval Architecture and Marine Engineering (NAME) program at UBC currently does not have its own special topics course. Given that the NAME program is growing and that their curriculum and special topics are interdisciplinary in nature, we would like to create a NAME special topics course to pilot new graduate courses and schedule special topics offerings. |

In lieu of a sample syllabus, we have attached a supporting document to our proposal that outlines the purpose of the courses, as well as the program policy on course requirements, the approval process, and how information will be communicated to students.

| Not available for Cr/D/F grading (undergraduate courses only) |
| Check the box if the course is NOT eligible for Cr/D/F grading and provide the rationale for this below. Note: Not applicable to graduate-level courses. |

| Rationale for not being available for Cr/D/F: |
| The default is that undergraduate courses are |
offered for Cr/D/F unless there is a significant reason as to why it should not be so.

- [ ] Pass/Fail or [ ] Honours/Pass/Fail grading
  (Check one of the above boxes if the course will be graded on a P/F or H/P/F basis. Default grading is percentage.)
To: Senate  
From: Research and Scholarship Committee  
Re: Establishment of the BioProducts Institute  
Date: 2 March 2020

The Senate Research and Scholarship Committee has reviewed the attached proposal from the faculties of Applied Science, Forestry, Land & Food Systems, and Science to establish a new institute for BioProducts. The Committee’s review of the proposal has focused on the academic subject matter, the financial viability and sustainability of the proposed institute, and the proposed governance structure. The proposal has also been reviewed by the Committee of Deans and the Research and Innovation Council. Separate to this recommendation, a recommendation will be coming forward from the administration to designate the new institute, if approved, as a Global Research Excellence Institute.

The Committee is pleased to recommend:

*That Senate approve and recommend to the Board of Governors the establishment of the BioProducts Institute within the faculties of Applied Science, Forestry, Land & Food Systems, and Science.*

---

1 The Senate Research and Scholarship Committee has assumed responsibility for recommending the establishment and disestablishment of research-focused institutes and centres to Senate from the Academic Policy Committee.
Proposal for the establishment of a
GLOBAL RESEARCH EXCELLENCE INSTITUTE

Oct. 29, 2019
Deans’ Message

Renewable carbon, captured in plants as well as forest residuals, organic waste, marine and agriculture biomass, must become the primary source for energy, chemicals, and materials to fulfill the needs of this century. The sustainable utilization of such resources demands interdisciplinary strategies, of which Canada is uniquely poised to become a global leader of the new bioeconomy. UBC’s BioProducts Institute (BPI) unites leading scholars in an innovation ecosystem that will facilitate high-impact fundamental research and create low-carbon footprint technologies to address society’s pressing challenges including resource sufficiency and climate change.

- **WHO?** Collectively, the BPI principal investigators represent, by any measure, the best available capacity for bioeconomy research and innovation world-wide. Institute faculty are established and emerging leaders in a broad range of disciplines, including chemistry, chemical and materials engineering, enzymology, microbiology, and synthetic biology. BPI’s capacity is continually enhanced by incorporating world-renowned academics in biological nanotechnologies of renewable materials, colloids and interfacial phenomena, e.g. the recent appointments of the Forest BioProducts Canada Excellence Research Chair, and the President’s Excellence Chair - both of which are cross-appointed over multiple UBC faculties, and the upcoming Canfor Advanced BioProducts Industrial Research Chair.

- **WHAT?** BPI is purposefully multidisciplinary and balanced between both fundamental and applied sciences, which enables academia, government and industry to benefit from research outputs. From the fundamental standpoint, the research team is using state-of-the-art genomics and biotechnology sciences to unlock the potential of materials produced in nature. Some of these materials include forest-, plant- and marine-sourced nanostructures that can be exploited for self- or directed assembly into advanced functional materials. They also are pushing the boundaries for additive manufacturing into ultralight and high-performance composites. The outputs are wide ranging and include the next generation nutraceuticals and structured food; advanced health materials; solutions for environmental remediation; systems for energy harvesting and storage that are portable and low cost; organic nanoelectronics and nanophotonics for security papers and diagnostics. Collectively they aim to develop a range of completely new answers to human needs using our forests in order to improve the quality of life.

- **WHY and WHY US?** By building BPI’s culture of collaboration, and co-investing in world-leading infrastructure, the individual UBC faculties are leveraging their own strengths into a cohesive and high-impact cluster with the vision and capability needed to realize the world’s sustainable future. No other university has the critical mass represented by UBC’s BPI faculty in the science and engineering research for the bioeconomy. They also stand out by leading the world in publishing in journals of the highest impact including Nature, Science, PNAS, Advanced Materials, among others. Major developments are currently arising from the BPI on the fundamental properties and advanced applications of cellulose and chitin nanofibers and nanocrystals, microbial polysaccharides, polymeric lignin materials, and chemo-enzymatic functionalized lignocellulosics, as well as bioprocessing such as engineered lignification pathways in trees, and bacterial degradation of lignin. Collaboration with key cross-geographical partnerships from industry, government and academia will ensure these developments produce tangible scientific, societal and economic impacts as well as evidence-based engagement in policymaking.


- **WHY NOW?** There is a recognition of the harm of climate change and plastic waste amongst the general public and government. We must develop innovative bioproduct solutions to address these critical problems. The time is right as Canada has taken significant steps in commercializing green technologies for production of renewable micro and nanoparticles. With the successful Canada Excellence Research Chair (CERC) application, CFI funding, and Western Economic Development (WED), and partner grants, totaling just over $55 M, a formalized institutional entity will provide a centralized hub to capture value for Canada, bring resources to the university, and serve as a conduit to highlight solutions to complex consumption and disposal problems. International initiatives such as the ongoing Boreal Alliance with Finland and Sweden, are further evidence of global activity in this area and will span from the already established connections of the members of BPI (and their former leadership roles in scientific clusters such as FinnCERES), with Aalto University and VTT in Finland, and Treesearch, RISE, KTH Royal Institute of Technology, the Wallenberg Wood Science Center in Sweden and EMPA, the Swiss Federal Laboratories for Materials & Technology.

The BPI has an innovative strategy for the future sustainability of its operations, research capacity, and financial self-sufficiency in place. A significant communal effort from the research and operational teams within the Institute has already built a strong foundation. The GREx investment will have a significant return, not only in growing funding value but also in societal, educational, scientific and industrial impacts. A high citation rate from academic outputs, and strong collaborations with industry, community partners, and other stakeholders will all further enhance UBC’s reputation.

Within the next five years, UBC will be THE leading institution for scientific endeavors in bioproducts research, training and education. In so doing, UBC will attract cohorts of the top students and researchers from around the world. Through BPI faculty will expand educational platforms, including workshops and enhanced disciplinary degree programs. Further, the BPI will become a “one-stop shop” for forest, chemical and biotechnology industries to acquire and advance transformational research outputs. We will establish new routes to uncover the complex structure of natural materials while at the same time pursuing the application of glycomics and glycoscience to improve human life. Finally, the Institute, through business development, will foster technology transfer and innovative spin-off companies from its work on new sustainable materials, chemicals and fuels.

In summary, UBC’s BioProducts Institute stands alone in Canada at the forefront of a globally-urgent scientific program that will lead with a critical combination of scientific, technological, economic, and environmental advances in the rapidly advancing bioeconomy space. We are resolved in our vision that the BioProducts Institute will take flight as a vehicle to advance UBC’s impact and visibility on the global stage.

Professor John Innes Dean,
Faculty of Forestry

Professor James Olson Dean,
Faculty of Applied Science

Professor Meigan Aronson Dean,
Faculty of Science

Professor Rickey Yada
Dean, Faculty of Land and Food Systems
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1. Introduction

Humanity must take immediate action to prevent climate change and to preserve the integrity of our ecosystems. Mitigating and altogether avoiding dire individual, social, and economic consequences of global warming will “require rapid, far-reaching and unprecedented changes in all aspects of society,” (H. Lee, chair of the UN’s IPCC). Working towards sustainable science and technological solutions, the UBC BioProducts Institute (BPI) is a multi-disciplinary cluster of researchers, scientists, engineers, and experts spanning four UBC faculties. Collectively, BPI researchers are striving for a society where materials, chemicals and fuels are sustainably produced from renewable sources (Fig.1). Global warming associated with climate change is likely to reach 1.5°C to 2°C between 2030 and 2052 if it continues to increase at its current rate. It is but just one critical factor within mounting concerns about the planet’s viability in the face of human activities. By reducing our dependence on “take-make-dispose” based products, through the development of a thriving circular bioeconomy that utilizes renewable carbon, we can cut GHG emissions, decrease recalcitrant pollution (e.g. disposable plastics), and foster healthy, sustainable living by exploiting the functionality of natural feedstocks. With the second largest boreal forest in the world that contributes $21.7 billion to our GDP, Canada has a significant opportunity to be a global leader in an estimated $1 trillion global bioproducts market by 2030. The vision of the UBC Bioproducts Institute is to lead scientific and engineering discovery and translational research needed to ‘grow’ nearly everything required by society from adhesives to nerve growth scaffolding.

To address current challenges, the BPI research team is creating the keys [the science and know-how] for unlocking nature — researchers are working on questions that include: “How do we control plant structure with desired traits for processing through genomics research?”; “How can individual plant cell wall components be isolated with superior material properties or high conversion rates into fuels?”; “How can nature’s nanotechnology be exploited in health care?”; and “How do we create cellular/biological machines to transform complicated plant components into specific high-value compounds?” Answering these questions provides humanity with essential insight necessary to control upstream production and advance technologies for downstream processing resulting in innovative materials and systems from renewable resources.

Science quality metrics within the BPI research cohort, along with substantial collaborative partnerships with industry, governments and leading academic and research organizations across Canada and globally, demonstrate BPI’s world-class research reputation in bioproducts. Over the past three years, researchers and operational staff of BPI – supported by Grants to Catalyze Research Clusters funding, faculty contributions, and significant external awards and investments, over $55 million, has put into place key building blocks toward establishing BPI as a functioning UBC GREx Institute:

---

**The UBC BioProducts Institute addresses society’s pressing environmental challenges by developing bio-based sustainable and circular innovations and solutions**

---
- Canada Excellence Research Chair in BioProducts award ($27M) and the recruitment of international renown Dr. Rojas,
- UBC’s President’s Excellence Chair award ($2.3M) and the recruitment Dr. Cranston, outstanding in her field,
- Canfor Advanced BioProducts Industrial Chair ($2M) and the recruitment of Dr. Foster,
- Tier-2 Canada Research Chair in Sustainable Functional Materials and the recruitment of Dr. Feng Jiang
- joint infrastructure, including two recent and significant equipment investment ($16 M), much of which is now installed,
- piloting units such as the Renewable Nature Gas production supported by a Western Economic Development Grant ($2.4M),
- industrial applied research consortia, the BC Pulp and Paper Bio-Alliance ($3.6M) with all 7 of BC’s pulp and paper companies,
- collaborative ecosystems within BPI’s world-leading research cohort,
- ongoing forums hosting prominent scientists to spark high quality research collaborations,
- awards program to strengthen excellence and participation of under-represented groups in the field,
- and development of strategic national and international roadmaps by championing unique research clusters.

The GREx investment will provide impactful operational resources in addition to the above building blocks to further expand BPI’s momentum and significantly support UBC’s Next Century strategic plan. BPI empowers all 3 Strategic Plan themes (innovation, collaboration and inclusion) and most of the 20 strategies such as collaborative clusters, inclusive excellence, global networks, practical learning, shared infrastructure and inspiring spaces, and significant role in attracting, recruiting world-leading faculty to UBC. The investments will be critical to accelerate the institute’s funding success and to enable world-leading fundamental and translational research. These outputs will fill key gaps in global and Canadian bioeconomy innovation ecosystem, further strengthen UBC’s global prominence in this field.

2. Enhancing UBC’s Global and National Reputation

Since 2006, world-wide publications in bioeconomy-related science have increased 20-fold (Fig. 2). BPI is already among the top bioproducts research institutes globally in research outputs; and GREx support will enable us to realize our growth strategy (detailed below) to become the world’s number one flagship institution in the area. BPI actively monitors a series of benchmarking metrics to evaluate international standing in the academic community and determine impacts on downstream stakeholders. UBC’s BPI cohort demonstrates significant scientific status in this field as highlighted in Figure 3.

![Figure 2. Rate of expansion of world-wide publications using a relative figure of 100 for 2015.](image)
Faculty Distribution

Career analytics*

<table>
<thead>
<tr>
<th></th>
<th>Publications</th>
<th>Citations</th>
<th>H-index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort total</td>
<td>6,911</td>
<td>234,383</td>
<td>Highest H-index: 85</td>
</tr>
<tr>
<td>PI average</td>
<td>128</td>
<td>4185</td>
<td>PI average: 28</td>
</tr>
</tbody>
</table>

Recent performance

<table>
<thead>
<tr>
<th></th>
<th>Research funding (past 5 years)</th>
<th>HQP graduations (past 5 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort total</td>
<td>$167,802,369</td>
<td>Cohort total: 796</td>
</tr>
<tr>
<td>PI average</td>
<td>$3,107,451</td>
<td>PI average: 15</td>
</tr>
</tbody>
</table>

New internal collaborators (2017/18)

<table>
<thead>
<tr>
<th></th>
<th>Average new PI to PI (per PI) collaborative relationships: 5</th>
</tr>
</thead>
</table>

Preeminent status

Fellows (Royal Society Canada: 5 and American Chemical Society: 1)
Industrial Research Chairs: 4; Canada Research Chairs: 7

Figure 3. Academic publications and rankings in bioeconomy-based research (note, not including PEC and CERC which combine to average nearly 70 publications a year and have been cited >20,000 times)

UBC’s Canada Excellence Research Chair (CERC) in Forest BioProducts appointee, Professor Orlando Rojas, will bring key expertise in bioproducts to synergize existing UBC academics elevating the institute. His expertise in surface chemistry, nanoscience and nanotechnology of renewable materials will enable the expansion of BPI’s network of actively engaged scientists and will enable the securing of additional research funding to provide innovative and sustainable solutions to global challenges impacting society and industry.

The addition of the CERC and associated four new hires committed to the CERC research program, including the recently-appointed UBC President’s Excellence Chair in Forest Bioproducts, Dr. Emily Cranston – former Tier 2 Canada Research Chair in Bio-Based Nanomaterials at McMaster University, Dr. Feng Jiang, Tier 2 Canada Research Chair in Sustainable Functional Materials, and the Canfor Advanced BioProducts Industrial Chair, Dr. Johan Foster starting in March 2020 (NSERC IRC application currently under review), will further position UBC in the driver’s seat of the future bioeconomy.

As part of its national strategy, BPI has recently led a Networks of Centres of Excellence proposal - BiRNet and though not awarded, developed substantial collaborative partnerships with companies and government agencies (who pledged over $10 M in proposal) including BASF, FPInnovations, Alberta Innovates, Canfor, CRIBIQ, and Domtar Materials as well as national research bioeconomy roadmaps.
3. Research Strategy

BPI’s cross-disciplinary approach integrates fundamental research that includes the harnessing of genomics and molecular biology to control composition and structure of feedstocks, the application of (bio)catalysis and chemical methods, including those undertaken in complex fluids, for disassembly and deconstruction, generating resources for fabrication of new materials using directed assembly and digital processing, coupled with the production of renewable energy (Figure 4). The traditional industry in Canada (lumber, pulp and paper) creates an important framework that can be leveraged for new outputs. Future technologies around omics and engineering can enable a broad societal impact to diverse industries such as transportation, healthcare and nutraceuticals. The BPI has taken an alternative approach of the traditional biorefinery paradigm, adding state-of-art biological sciences and engineering into the biorefinery, along with research into high value bio-based micro- and nanoparticles as part of the outputs, that will facilitate innovation in a 21st century biorefinery.

![Figure 4. BPI’s vision of the biorefinery incorporating innovative bioproducts supported by genomics and biocatalytic transformation of biomass based on self-identified research themes, and described in detail in Table 1.](image)

Table 1 provides a snapshot of the four research themes within BPI. These core themes, which are detailed in the subsequent sections, are designed to maximally leverage expertise within the BPI cohort to collectively address significant challenges faced by society. Many of the PIs have research activities spanning multiple themes, which is highlighted in their short research bios below by a superscript number indicating their additional theme connections. One of the advantages of BPI breadth is that there are technical interlinkages between the themes (as highlighted in Fig. 4), which will accelerate cross-disciplinary work and derived rate of innovation. For example:

- Engineered organisms (theme 1) can produce functionalized nanoparticles and biopolymers for theme 2 and 3.
- Engineered feedstocks (theme 1) enable greener processing and novel fractionation in a biorefinery (theme 4)
- Tailored bio-nanoparticles (theme 2) can be combined with biopolymers from theme 3 to create hybrid materials.
Equally, BPI will build on existing socio-economic expertise in Forestry for example as well those that have been developed as result of multiple discipline integration through Genome Canada programs. The intention is to integrate early on social scientists, including design and related fields into BPI research and to capture policy frameworks and directions.

### Table 1. Summary of the four themes of the BPI, underlying scientific approaches and impact

<table>
<thead>
<tr>
<th>Research Theme</th>
<th>Scientific Approach</th>
<th>Scientific Advancement</th>
<th>Expected Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Biocatalytic transformation and engineering of biomass</td>
<td>Genomics, metabolomics, protein engineering, metabolic engineering, synthetic biology</td>
<td>Enzyme and cellular function (including metabolic pathways and their regulation), biological control systems, chemical/material functionalization</td>
<td>Novel biocatalysts and biocatalyst-based processes, new platform chemicals, greener processes, biocompatible systems, engineered feedstocks</td>
</tr>
<tr>
<td>2 Bio-nanoparticle enabled materials</td>
<td>Colloid and interface science of bio-based nanoscale polysaccharides, proteins, and lignin (potentially combined with polymers, inorganics and synthetic nanoparticles)</td>
<td>Establish necessary theoretical and practical frameworks to advance science, and new engineering tools to enable novel materials</td>
<td>Benchtop discoveries to advance technology readiness of bio-nanoparticle-based materials, e.g. sensors, biomedical devices, structured food additives, cosmetics, coatings, dental implants and flexible electronic displays</td>
</tr>
<tr>
<td>3 Bio-based polymers and carbon materials</td>
<td>Organic synthesis, characterization, rheological analysis, hybridization, and processing including extrusion and 3D printing of bio-based monomers and polymers</td>
<td>New feedstock, conversion and processing strategies of bio-based materials with emphasis on material design for circular bioeconomy</td>
<td>Biodegradable plastics and bio-adhesives, carbon fibre, and textiles for sustainable materials innovation and mitigating pollution</td>
</tr>
<tr>
<td>4 Biorefinery &amp; Biofuel systems</td>
<td>Fluid dynamics, mass and heat transfer, processing, catalysis, particulate analysis</td>
<td>New processes, scale up, de-risking and advanced manufacturing and conversion technologies, along with bioremediation strategies</td>
<td>Bio-derived chemicals, biofuels, clean energy, and environmentally benign solutions</td>
</tr>
</tbody>
</table>

**Theme 1: Biocatalytic transformation and engineering of biomass**

This theme encompasses the biosynthesis and biological degradation of biomass as well as the engineering of these processes to extract and valorize the different biomass components. Fundamental research is aimed at understanding how genes and their products function in the context of complex biological systems to synthesize, assemble and degrade biomass. Applied research includes using protein engineering and synthetic biology to design “biomass crops” and biocatalysts. These applications include developing new biocatalytic routes to valorize biomass, to reduce energy requirements and waste production, as well as to functionalize biomass for novel uses.
in chemical and materials manufacturing.

Jörg Bohlmann (Faculty of Science, SCI and Forestry, FOR) explores genomes of forest trees and other plants for biosynthetic systems to produce high value metabolites in engineered plants or through synthetic biology. Harry Brumer²,³ (SCI) studies fundamental and applied aspects of carbohydrate enzymology, including the discovery and characterization of new biocatalysts for biomass conversion, and the development of chemo-enzymatic processes for polysaccharide and fiber modification. Lindsay Eltis³ (SCI) studies the microbial degradation of lignin and aromatic compounds. His research facilitates the development of bacterial- and enzyme-based biocatalysts for converting lignin to commodity chemicals in high atom yield. Steven Hallam (SCI) harnesses the power of environmental genomics and synthetic biology to characterize and engineer microbial pathways and communities for various applications including biomass valorization. Shawn Mansfield³ (FOR), studies plant metabolism and cell wall development, including lignin biosynthesis. His applied research includes producing trees with different phenotypic fibre characteristics. William Mohn’s (SCI) research focuses on bacterial metabolism and understanding the complex microbial communities in soil that sustain forest health. His research informs biocatalyst design as well as the sustainable management of forests and understanding microbial mediation of global change. Michael Murphy (SCI) studies the structure of enzymes that depolymerize and transform lignin to inform the engineering of biocatalysts. Lacey Samuels (SCI) studies how plant cells produce and deposit the components of biomass, including cellulose, xylan, and lignin. Vikramaditya Yadav⁴ (Faculty of Applied Science, APSC) uses synthetic biology, enzyme engineering and bioprocess engineering to develop new biomanufacturing processes to convert biomass-derived feedstocks into improved fuels and pharmaceuticals. Stephen Withers³ (SCI) focuses on enzymes that catalyze glycoside formation and hydrolysis. Using techniques of metagenomics and directed evolution he develops new catalysts for biomass valorisation.

Theme 2: Bio-nanoparticle enabled materials

UBC has an outstanding collection of researchers that isolate and study the behaviour of bio-based nanoparticles with unexpected material properties. In this theme, the researchers examine the parameters that dictate assembly into supramolecular structures as well as the fundamental interactions between bio-based nanoparticles and surrounding liquids, and other components in composite and hybrid materials. Researchers aim to elucidate the effects of nanoparticle production parameters, post-production modification routes, and material processing on physicochemical properties to optimize performance and impart unique structural, conductive, thermal, optical, dispersibility, biocompatibility, and diagnostic abilities.

Emily Cranston³ (APSC, FOR) currently focuses her research on the production, functionalization and characterization of cellulose nanocrystals aimed at tailoring interfacial properties for nano-enhanced and nano-enabled bioproducts with applications in adhesives, food, biomedical scaffolds, energy storage and water purification. Peter Englezos (APSC) explores novel applications of wood fibres and fibre networks of various sizes using surface engineering with a specific focus on controlling water vapor transmission rate and water repellency. Johan Foster³ (APSC) research currently focuses on structuration, functionalization and the fundamental aspects of reinforcement and deformation in bio-nanoparticles and polymers, for applications in implantable, lightweight, 3D printable and responsive “smart” materials. John M. Frostad³ (APSC/ Land and Food Systems, LFS) studies the physics of fluid-fluid interfaces laden with bio-based nanoparticles and biomolecules for applications in multi-phase food products and other commercial and industrial processes. Dana Grecov (APSC) uses cellulose nanocrystals as additives to develop new high-performance green lubricants with low coefficient of friction and wear for different industrial and biomedical applications Feng Jiang’s⁴ (FOR) research is centred around the
conversion of biomass into functional nanocellulose and assembled structures. His work includes new isolation/modification pathways and assembly strategies targeting applications in biomedicine, environmental remediation and additive manufacturing. **Hongbin Li** (SCI) uses cellulose nanocrystals to design protein/cellulose hybrid biomaterials for various medical and material science applications. **Mark Maclachlan** (SCI) uses nanoscale cellulose and chitin as templates to create new hierarchically structured materials such as glasses and plastics which mimic structures in nature, e.g. the iridescence of beetle shells. He has also developed cellulose materials (aerogels, hydrogels, composites) that can be used for pressure and strain sensing. **Adriana Manso**'s (Faculty of Dentistry) endeavours are linked to the development of resin-based dental materials where cellulose nanocrystals can act as reinforcing agents and functionalized components to instil antimicrobial properties. **Carl Michal's** (SCI) research focuses on the structure and dynamics of biological nanomaterials (including cellulose nanocrystal-based materials) studied using solid-state nuclear magnetic resonance. **Orlando Rojas**'s (APSC, FOR, SCI) research revolves around high surface area bio-based materials including nanofibrillated cellulose, cellulose/chitin nanocrystals, lignin particles and biopolymer assemblies. These starting materials are assembled into a range of larger structures including emulsions, thin films, aerogels and hydrogels. **Anubhav Pratap Singh** (LFS) studies the process of encapsulating biomaterials in the form of nano-emulsions and nano-lipid carriers using plant-based proteins, iron, zinc and vitamin B12 micronutrients, isoflavones and high-molecular-weight peptide (protein) hormones like insulin as stabilizers.

**Theme 3: Bio-based polymers and carbon materials**

Bio-based polymers have unique functionality and variability unavailable in synthetic materials. Researchers in this theme have interest in identifying structural attributes of these polymers and establishing structure-property relationships to understand the impact of structures on their thermo-physical and rheological properties as well as processing (including 3-D printing). Research in this theme will seek a fundamental understanding of the materials and their potential transformation into advanced bioproducts.

**Derek Dee** (LFS) uses genetic and chemical modification of proteins for engineering functional amyloid fibers, using click chemistry to add functional domains (e.g., enzymes, nanoparticles, DNA, peptides) and alter fibril characteristics (solubility, dispersibility, charge, stiffness). **Kevin Golovin** (APSC at UBC Okanagan) studies interface modification to affect adhesion, wettability, bioactivity, and mechanics, with an end goal of engineering novel coatings for sustainable textiles, additive manufacturing, and low-adhesion materials. **Savvas Hatzikiriakos** (APSC) studies how main constituents of wood such as cellulose and lignin can be chemically modified to produce functional materials that can be used in fabrication of sensors such as diodes and piezo-ionic actuators. In addition, his group studies the incorporation of cellulose and lignin in polymers to produce nanocomposites suitable in 3-D printing and smart packaging. **Frank Ko** (APSC) focuses on spinning of lignin into nano and micro fibres for subsequent carbonization to make lignin-based carbon fibres. Spinning techniques include melt and solution spinning of discrete fibers and electrospinning of nanofiber mats. **Xiaonan Lu's** lab (LFS) has expertise in developing various molecularly imprinted polymers, also called "artificial antibody", that can specifically recognize, capture, and enrich the targeted analyte(s) in a complicated system, such as agri-foods. These biomimetic polymers have broad application for separation, processing and engineering. **Mark Martinez** (APSC) uses computational fluid dynamics to design new reactor systems for advanced biopolymer and fibre processing into 2-D and 3-D shapes. **Parisa Mehrkhodavandi** (SCI) has developed indium and zinc catalysts for the selective and controlled polymerization of lactones, some bio-sourced, to form biodegradable materials. These catalytic systems are air and moisture tolerant, limiting the need for purification of monomers and making reactivity with bio-based monomers possible. **Scott Renneckar** (FOR) uses advanced characterization methods to analyze bio-
based polymers, modifies them utilizing green chemistry principles (e.g. low E-factor & high atom economy) producing novel materials for packaging, green buildings, environmental remediation, and additive manufacturing. Laurel Schaefer² (SCI) develops new catalytic systems based on early transition metal complexes which can be used in industrially relevant carbon-carbon and carbon-nitrogen forming reactions. These systems can be used to generate value-added products and functional materials from biomass-derived starting materials.

**Theme 4: Biorefinery & Biofuels systems**

To achieve an effective reduction in the carbon intensity footprint of our global society will require a multi-prong approach. British Columbia is endowed with plentiful “green” (hydro) electricity, innovative policies such as the low carbon fuels standard, and an innovative forest sector. For example, decarbonizing long distance (planes, ships, trains and trucks) transport will require some form of biofuels. This theme looks at how we move from a hydrocarbon to a carbohydrate society: forest/agricultural resides will be transformed through a biorefinery into chemicals and fuels that are functionally equivalent or superior to the products we now make from oil. In addition to the technical aspects of biorefining the economic, sustainability and policy metrics required to transform our current oil-based society to a more sustainable world will be researched.

Susan Baldwin’s² (APSC) research focus is environmental sustainability through bioremediation. Recently she has been using pulp mill waste ash for the purpose of bioremediation of mining sites while also recovering metals from mine wastewater for reuse as part of the transition to a circular economy. Xiaotao Bi (APSC) is the Director of UBC’s Clean Energy Research Centre (CERC) and an expert on dual fluidized bed gasification of biomass into renewable natural gas. He is also a leader in environmental systems analysis and life cycle analysis of biomass energy systems. Naoko Ellis’ research expertise (APSC) is in the area of multiphase reactor engineering. She is involved in production of liquid fuel from biomass waste, CO₂ capture and tar reduction in biomass gasifiers. Jack Saddler³ (FOR) is the Task Leader of IEA Bioenergy’s Task 39 (ww.Task39.org) which works to commercialize liquid biofuels, such as biojet, by facilitating international cooperation, communication while promoting research into policy and technology issues related to decarbonising our global economy. Kevin Smith (APSC) focuses on understanding the relationships between heterogeneous catalyst properties, reactor kinetics and mechanisms in order to assist the design of catalytic processes. Current activities include conversion of synthesis gas to alcohols and hydrocarbons, and upgrading of residues and bio-oil. Heather Trajano’s³ research (APSC) focuses on conversion and fractionation of biomass for maximum economic and environmental benefit. Of specific interest are deconstruction of hemicellulose, recovery of extractives and heterogenous catalysis for chemical production. Qingshi Tu (FOR) investigates development and implementation of sustainable technologies, including biorefineries, via life cycle analysis, technoeconomic analysis and computational modelling.

**4. BPI 5 Year Goals**

The BPI team will champion a number of key areas for the growth of the institute that include increasing interdisciplinary innovation, HQP attraction and development, major team grant applications to support institute funding sustainability, EDI (equity, diversity, and inclusion) and Indigenous initiatives, partnerships with top-tier institutions and for global impact, and knowledge dissemination. Table 2 highlights BPI’s 5-year goals and metrics for which GREx support will be instrumental, with the following subsections providing insight to achieving the goals.
Table 2. BPI 5-year Goals to achieve preeminent status

<table>
<thead>
<tr>
<th>Goals</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Fostering Exceptional Interdisciplinary Collaborative Research and Innovation in Bioproducts</td>
<td>Significant increase in joint publications between researchers and with national/international partners</td>
</tr>
<tr>
<td>2) Attracting Top HQP and Enhanced HQP Cross-Training to Accelerate Innovation</td>
<td>Increase number of distinguished HQP qualified by scholarships, awards and post-BPI positions</td>
</tr>
<tr>
<td>3) Accelerating Research Funding and the Sustainability of UBC BPI</td>
<td>Successfully secure major research funding, stretch target of $78 M over 5 years.</td>
</tr>
<tr>
<td>4) Fostering Excellence in Equity, Diversity and Inclusion and Indigenous Engagement</td>
<td>Established proactive practices and programs to continually strive for excellence. Exemplary EDI metrics and culture as measured in annual full membership survey.</td>
</tr>
<tr>
<td>5) Advancing UBC BPI Global Recognition through Partnerships with Top-Tier Institutions</td>
<td>BPI recognized as a “top 3” global bioproduct academic institute, measured by key indicators (scientific excellence and recognition through awards and grants). Established impactful global partnerships - acknowledged by the scientific rankings, survey of international related scientific community.</td>
</tr>
<tr>
<td>6) Enabling BPI Knowledge in Action (knowledge dissemination, commercialization, influencing policy and/or standards)</td>
<td>Number of conference presentations, whitepapers, patents, government briefings, startups, media mentions, standards meetings etc.</td>
</tr>
</tbody>
</table>

1) Fostering Exceptional Interdisciplinary Collaborative Research and Innovation in Bioproducts

Accelerating research collaboration is a deliberate strategy consisting of a number of organized technical activities designed to seed, foster, and develop interactions with researchers in different specialized fields in order to accelerate breakthroughs to solve global sustainability challenges highlighted below.

To provide a forum and culture for collaboration, BPI GREx will:

(a) **lead grand challenge collaborative research workshops** to develop interdisciplinary-projects to tackle global issues highlighted below. With participation of industry, government and external international stakeholders, this annual event will bring together thought leaders, influencers and top-tier industry leaders to engage with BPI researchers in order to strategize on tackling grand challenges with global impacts.

(b) stimulate technical debates from interdisciplinary viewpoints from the **on-going BPI technical seminar series** comprising of invited international researchers in different theme topics.

(c) **host globally significant summits** for top-tier researchers and their HQP every 2 to 3 years to showcase BPI impacts in the global scientific community, highlight collaborations with international partners and promote bioproducts to industry and government officials, and seeding the formation of future research programs.

(d) refine and continue the **annual UBC BPI Researcher Day**, where each research theme presents and showcases their recent studies. This event is designed to maximize information sharing within BPI and to
promote research excellence to industry and government stakeholders. (e) coordinate technical workshops organized by themes and cross-themes research topics. These workshops organized by the HQP are designed to encourage HQP collaborations and cross-training between research groups, leveraging on the concentration of research expertise and enabling BPI to explore the depth in research foci.

**Cross-cutting Global Sustainability Challenges**

The BPI is addressing global sustainability challenges by driving the science required for the design and deployment of sustainable feedstocks, innovative processing platforms, alternative bio-based intermediates to petroleum analogues, and transformative end-use applications. Such efforts will ensure carbon-neutral fuels, biodegradable plastics and lightweight packaging, and functional chemicals that will be key to improve the quality of life, the environment and to ameliorate climate change. Throughout the themes a common inspiration is to understand and access the diversity and functionality of organisms and biologically-derived materials for advanced renewable technologies. In so doing we will drive towards addressing the following three main challenges on global sustainability:

**Challenge 1: Decarbonizing society** by enhancing conversion efficiency related to biofuel production and replacing petroleum feedstocks in biochemical production;

**Challenge 2: Creating sustainable packaging** innovation by designing recyclable/biodegradable plastics, lightweight materials, and enhancing barrier properties for renewable biobased polymers;

**Challenge 3: Developing circularity** in our approaches by engineering new products from residues and waste, used or underutilized biomass for next generation chemicals, energy storage devices and environmental remediation.

BPI researchers in multiple themes work with value chain partners to tackle specific challenges. Some specific examples of these efforts: Drs. Eltis, Mansfield, and Renneckar (theme 1 and 3) are working together to take pulp mill waste (challenge 3), separate and analyze the components and create platform chemicals through consolidated bioprocessing that would replace petroleum analogs (challenge 1) along with identifying components useful for biodegradable bioplastics (challenge 2). Another example is Drs. Trajano (theme 4) and Schafer (theme 3) working to extract valuable compounds from cedar chips (challenge 3), prior to the use for bioenergy, to develop interesting compounds for pharmaceuticals. A third example, is the development of sustainable packaging materials (challenge 2), with collaboration from Drs. MacLachlan (theme 2), Hatzikiriakos and Mehrkhodavandi (theme 3), studying the processing of polylactic acid polymers reinforced with cellulose nanocrystals to achieve performance enhancement. Future funding via large team proposals will further propel the team to address challenges.

2) Attracting Top HQP and Enhanced HQP Training to Accelerate Innovation

BPI will develop a value-added experience for our HQP that best prepares them for positions in academia, industry, and government organizations. BPI will foster opportunities for international research exchanges, business and entrepreneurial skills development, industrial internships, and community volunteering assignments, which are expected to be highly attractive to prospective HQP candidates. The EDI and Indigenous Coordinator, who will have a professional qualification in training and development, will administer the HQP program, including program promotion, day-to-day operation, championing new initiatives, and measuring program effectiveness.

Training will emphasize mentoring, networking, knowledge transfer, and linkages with the sector and associated
communities. Graduate students will be encouraged to be jointly supervised where possible by at least two faculty members from different departments to provide multidisciplinary perspectives. Shared infrastructure and the collaborative nature of the BPI will also ensure that students get experience from multiple labs on campus throughout their training. Training programs as defined in the submitted NSERC CREATE in Advanced Bio-based Materials industrial proposal will be designed to ensure that HQP meet current and future sector needs.

BPI researchers will be at the centre of our HQP training. We already have members that provide an outstanding mentoring environment, like Laurel Schafer and Mark MacLachlan, who are recipients of the Killam Award for Excellence in Mentoring. The faculty members’ dedicated mentorship and collaborative relationships will allow HQP to receive a significantly value-added experience through participation in broader institutional activities such as BPI Researcher Day and theme meeting workshops. BPI will capitalize on its multidisciplinary, multi-sectoral network to develop HQP by ensuring their mobility to access a pool of academic and industrial mentors. BPI will also provide industry mentors to our HQP as part of industrial short-term secondments for undergraduates, graduates, PhDs, and PDFs.

Over the next 24 months, BPI will implement an operational framework to establish its HQP training network run by HQP. Key initiatives will include:

- Build an advanced education platform for research students in the BPI (based on CREATE application submitted);
- Targeted recruitment to find and attract top-tier graduate students by providing special opportunities, such as exchange programs, special events with industry partners and opportunities to participate in international conferences;
- Provide support (visiting speakers, sector foresight etc.) to the new Forest Bioeconomy Science and Technology undergraduate curriculum in the Faculty of Forestry;
- Extend the scope of the PDF training (~10 PDF/year) created via the BC Pulp and Paper Bio-Alliance collaboration;

3) Accelerating Research Funding and the Sustainability of UBC BPI

A key priority will be to take advantage of the synergies and leadership position of the BPI to develop winning proposals for larger team funding programs such as the New Frontiers in Research Fund Transformation. These programs offer a unique long-term opportunity to build on the existing large funding commitments (e.g. CERC, CFI, PEC) and will be the next stage in strengthening and providing sustainability to the Institute. Resources available via GREx investment, including staff with specialized technical and business skills, will be critical for successfully securing external support.
Table 3. High-level funding targets for BPI – Five-year total

<table>
<thead>
<tr>
<th>Item - Target</th>
<th>2020 - 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Frontiers, Transformation/International (UBC portion)</td>
<td>$10,000,000</td>
</tr>
<tr>
<td>Western Economic Development and CFI</td>
<td>$8,000,000</td>
</tr>
<tr>
<td>Bio-Alliance (Phase 2)/Industry partners</td>
<td>$3,000,000</td>
</tr>
<tr>
<td>Canfor IRC Chair matched by NSERC</td>
<td>$4,000,000</td>
</tr>
<tr>
<td><strong>Total Funding Target</strong></td>
<td><strong>$25,000,000</strong></td>
</tr>
<tr>
<td><strong>Return on Investment ($/$ GREx invested)</strong></td>
<td><strong>12.5 to 1</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item – Stretch Goals</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry-provided research/infrastructure investments over 5 years</td>
<td>$25,000,000</td>
</tr>
<tr>
<td>Large-scale R&amp;D competition in the next 5 years</td>
<td>$25,000,000</td>
</tr>
<tr>
<td>International / Horizon 2020 investment</td>
<td>$3,000,000</td>
</tr>
<tr>
<td><strong>Total Stretch</strong></td>
<td><strong>$53,000,000</strong></td>
</tr>
<tr>
<td><strong>TOTAL FUNDING OPPORTUNITY</strong></td>
<td><strong>$78,000,000</strong></td>
</tr>
</tbody>
</table>

4) Fostering Excellence in Equity, Diversity and Inclusion and Indigenous Engagement

BPI recognizes the importance of EDI in improving research, operations and training excellence and has strategies to proactively raise awareness and address barriers (including cultural) to provide equal opportunities to all members of the institute and its network. BPI will ensure an EDI and indigenous focus within all aspects of the Institute and will champion ongoing best practices with the support of UBC resources, including the Women’s Centre, UBC E&I Office, related Associate Deans of Diversity and Inclusion, First Nations House of Learning, and the UBC Centre for Accessibility.

The BPI EDI and Indigenous strategic plans currently under development (see Appendix 1 and 2) will be completed with the engagement of all BPI members and other resources available at UBC and beyond. A few elements of the EDI plan include:

- Establishment of a BPI EDI sub-committee and EDI and Indigenous coordinator who collectively provides proactive leadership to identify potential gaps at all levels (e.g. structure, policy and process) and to design new initiatives to address them towards continuous improvement. This includes working with VPRI as part of the Dimensions pilot.
- A special focus on BPI’s HQP recruitment and training strategy to ensure all possible implicit and explicit EDI barriers are removed
- The annual BPI Rising Star Scholarships (BPI - Rising Star Award) to support the attraction and retention of researchers from under-represented groups
- Ongoing EDI workshops on such topics as recruitment/interviewing, implicit and general biases and coaching/training practices and an available resource portal for all BPI members
5) Advancing UBC BPI Global Recognition through Partnerships with Top-Tier Institutions

BPI will make a global impact by advancing and communicating BPI outcomes bearing a worldwide footprint. An example of the instruments that will serve such purpose is the Boreal Alliance, which is being created between peer institutions around the world. BPI will formalize the Boreal Bioeconomy Alliance between the Canadian academic clusters led by UBC and our counterparts in Sweden (RISE, Treesearch and Wallenberg Wood Science Center), Finland (VTT and FinncERES) and Switzerland (EMPA). The alliance would foster collaboration through PI and HQP exchanges and sabbaticals resulting in co-authorship of high-impact publications, alignment of infrastructure investment, and diversification of the funding pools available to all parties (e.g. Horizon 2020). The BPI CERC will play a critical role in creating these partnerships given his recent background in that region. Importantly, these partnerships will be conducive of strategic initiatives with support from international entities, ministries and supranational organizations.

An important aspect of advancing BPI towards an international stage is to proactively engage and communicate with key stakeholders (researchers, institutions, industries and government labs). Not only is this important part of BPI’s knowledge translation goals, but it is also important for capturing the insights and technology-market analysis that are key in driving the strategic research and operation directions.

A communication plan will be developed and initiated in Year 1 and will include for example:

- a guideline for use of BPI as an affiliation for authorship in order to promote and track citations arising from the BPI portfolio, and
- a strong web and social media presence with whitepapers, short videos and infographics.

Strategic insight activities will include:

- Creating stakeholder workshops and listening days,
- Initiate UBC faculty forums to capture strengths around bioproducts,
- Identifying targeted challenges/topics that could be addressed via partnerships, and
- Engage stakeholders to address targeted translation challenges and identify approaches to reducing technology uncertainties.

6) Enabling BPI Knowledge in Action

As highlighted above, to accelerate impact on society’s urgent challenges, BPI will proactively drive knowledge translation with partner organizations through the entire process from research, to dissemination, to uptake and ultimately implementation for impact. Early partner engagement will ensure “technology pull” and HQP training as well as provide the vehicle for dissemination of knowledge and innovations. A key effort will be made to develop clear language summaries for media and policy makers. BPI will work with the Innovation UBC teams to identify new intellectual property (IP), IP licensing and start-up opportunities and the associated commercialization. Where possible PIs will participate in standards bodies or government meetings to bring scientific analysis to standards / policy development. One of additional benefits of the Boreal Alliance will be to coordinate and unify this scientific support to policy resulting in a stronger voice within the respective countries and internationally. With respect to implementation impact, one of the hallmarks of BPI are pilot scale activities that very few institutions globally are able to offer, infrastructure recently bolstered by an $18.4M CFI and WED investment.
5. Governance and Operational Structure

After broad consultation, including with the QMI GREx, BPI is recommending a combined faculty/non-faculty senior leadership team structure (Fig. 5). As a GREx Institute, governance, operational leadership and external review vehicles will provide effective management of scientific direction, research priorities, and independent financial oversight from UBC-IPO. The proposed structure will enable BPI to leverage the significant collective experience of the VP of Research and Innovation, the Research Innovation Council, Deans of the associated Faculties, PIs and the management team in designing and leading large-scale collaborative research and training programs and impactful academic/industry partnerships.

The UBC CERC in Forest BioProducts, Dr. Rojas, will be the Scientific Director of the BPI, defining and leading a cohesive research program across all PIs and HQP. With an emphasis on developing BPI into an internationally exceptional institute, the Scientific Director will place significant emphasis on externally facing matters, interfacing with international networks and creating new multi-national initiatives. The Scientific Director will be supported by Theme Leaders, the Operations Director and the Business Development Director. Together, they will ensure BPI’s research excellence by strengthening UBC’s academic and industrial collaborations through international networks, leading large research grant applications, and attracting the highest quality researchers and trainees to the BPI.

Figure 5. Proposed operational structure for BPI. Scott Renneckar is the interim Scientific Director until December 2019.
As a GREx Institute, the BPI will be run through the operation of several inter-related technical and non-technical committees. The structure and relationship between these committees is illustrated and described below.

The Deans Council (DC) includes the Dean of Faculty of Applied Science, the Dean of Faculty of Forestry, the Dean of Faculty of Land and Food Systems, the Dean of Faculty of Science, the BPI-GREx Scientific Director, and the Associate Director of the Institutional Programs Office (Office of VPRI). The committee will meet annually. The Chair of this council, the Dean of Applied Science, will meet with the Scientific Director on two additional occasions over the course of the year. The DC is entrusted with overseeing academic matters related to management, direction and fiscal accountability. The Scientific Directors direct report is to the Chair of the Deans Council.

VP Research and Innovation and the Research + Innovation Council: In addition, the Scientific Director reports, represented by the dotted line, to the VP Research and Innovation (VPRI), who is the chair of the UBC Research + Innovation Council (RIC) comprising of; the Provost and Vice-President Academic; the Associate VP Research and Innovation; the Associate Vice President Research & UBC-Okanagan Vice Principal Research; three Deans; and three external members. The RIC is responsible for providing oversight of GREx Institutes.

International Scientific Advisory Board (SAB): A Scientific Advisory Board, consisting of international prominent researchers in academia, government and industry will be created. The board will provide leadership, guidance and direction for the proposed GREx and will oversee the institute’s research portfolio. It will review progress reports and research summaries, and receive input on researcher-partner collaborations from the institute’s management team. This committee will also make recommendations on the inclusion of new researchers and new strategic collaborations with other international networks. The Scientific Advisory Board will report findings to the Scientific Director and propose recommendations to the DC and RIC. The SAB will meet bi-annually (once by teleconference), or more frequently, as required.

Scientific Steering Committee (SSC): a small working group consisting of the Scientific Director, the leaders of the four scientific themes, the Business Development Director and the Operations Director will develop and maintain a research matrix that maps how the milestone deliverables from each theme and projects within the themes inter-link in order to the provide the overall deliverables of the institute. The research matrix contains market-pull information derived from collective sector needs in near, medium and long term goals, which are then translated into the technical specifications and the research goals. The SSC chair will be selected on an alternating basis from the theme leaders. An interim SSC Chair is Dr. Scott Renneckar. The primary responsibilities of the SSC are to support and track the scientific and technological progress from the themes on a more regular basis than the Scientific Advisory Board, to analyze the deliverables against the research matrix and the institute goals, and to provide technical analysis and high level recommendation memos to the International Scientific Advisory Board. The SSC will meet every two months, or more regularly as required. This committee will also ensure the exchange of knowledge between clusters of research groups/partners and provide technical knowledge and advice on technology transfer. The SSC members and the Scientific Director form the senior leadership team. They are responsible for executing the BPI Growth.

Operational oversight and day-to-day activities of the institute will be led by an Operations Director working with the assistance of administrative staff including a Financial Coordinator who reports directly to UBC-IPO as part of an independent financial oversight. New business development and major research funding for BPI will be led by a Business Development Director, who will bring strong innovation deployment experience and network of traditional and non-traditional sector stakeholders. The Business Development Director will work with a grant facilitator and a technical project manager(s) in collaboration with the UBC VPRI Innovation team to pursue major funding opportunities, managing the Institute’s investment/funding strategy and leveraging commercial
opportunities for BPI in order to ensure the long-term financial sustainability.

6. GREx Funding to Enable Transformation into a Preeminent Institute
The BioProducts Institute has made remarkable progress over the past three years, in partnership with GCRC, UBC and Faculty support putting in place a strong collaborative research culture and program of over $55 million with the opportunity to more than double that over the next 5 years. With the urgency of the world’s sustainability challenges, now is the time to leverage this foundation and accelerate BPI’s actions and impacts. The new people and program support provided by the GREx funding will catalyze important outcomes as highlighted in the BPI 5-year Goals that will not be achieved otherwise. Becoming a global focal point of bioproducts research excellence, UBC BPI will drive research “collisions” between Faculties, attract top research talent, provide world-class training experiences and generate exciting new discoveries and innovations for global sustainability.
Appendix 1: BPI EDI Strategy – still in development

UBC has been selected as one of Canada’s Best Diversity Employers for the past 4 years (2016-2019) based on its demonstrated commitment to equity via initiatives and strategic hires, including the Vice Presidents’ Strategic Implementation Committee on Equity & Diversity, the Senior Advisor to the Provost on Women Faculty and the Senior Advisor to the Provost on Racialized Faculty. Other initiatives include the annual "Thrive" week to encourage awareness of mental wellbeing, the Positive Space campaign and Pride Week for the LGBTQ+ community and the Equity Enhancement Fund.

UBC’s Employment Equity Plan focuses on the identification and elimination of institutional barriers that prevent the full participation of qualified members of the federally designated groups (FDG) in the workforce. These FDGs include women, Aboriginal Peoples, visible minorities, and persons with disabilities; in addition, UBC has identified persons of minority sexual orientations and gender identities as an additional group. In 2014, UBC developed the Renewing our Commitment to Equity and Diversity task force, which mandated that each Faculty integrates equity into their portfolios through the appointment of a Diversity & Equity senior administrator and a formal equity themed orientation process was established for new faculty, staff, students and committees. Each faculty involved in the BPI adheres to this mandate, including equity and diversity as priorities in its strategic plan and employing senior administrators (e.g., Associate Dean, Equity and Diversity in Science, Aboriginal Initiatives Coordinator in Forestry, EDI Advisor, Applied Science) to operationalize those priorities. The Faculties are actively engaged in diversity initiatives such as the Women in Science and Engineering mentoring program and other initiatives stemming from the NSERC Chair for Women in Science and Engineering, such as the goal of ‘50/50 by 2020’: ensuring gender parity in engineering by the year 2020. Indigenous students in engineering, science and forestry are supported by the Verna J. Kirkness and Geering Up! programs, which together provide research laboratory experience and experiential science and engineering training to over 500 Indigenous students annually. In addition, the Faculty of Forestry employs an Aboriginal Initiatives Coordinator (who is herself Indigenous) to support the BPI team and track success. The phase 1 CERC proposal’s equity plan was well-received by the review committee, and will be updated, enhanced and implemented by the CERC and BPI researchers and staff. Best practices and policies outlined from the CERC program, the UBC Equity and Inclusion Office (EIO) and UBC Human Resources (HR) will be the foundations of BPI’s EDI program.

The BPI team has been working closely with the UBC E&I office to develop, implement and track equity and diversity. The BPI portfolio includes the responsibility for tracking E&I measures and ensuring the career and training benefits of its programs are being made equally available to designated groups. The BPI Equity Plan includes: (i) Ensuring awareness of existing support programs via the BPI website and other communication channels; (ii) Training programs on equity fundamentals for faculty, staff and students with diverse backgrounds; (iii) Proactive mentoring networks; (iv) Engagement of Indigenous communities with BPI research outputs, benefits and on co-creation of research as well as recognition of traditional knowledge (see Appendix 2); (v) Availability of funding and strategic equity support activities that encourage peer interaction among trainees, as well as whole-team, informal interactions to ensure a sense of community; (vi) Creation of regular BPI events to showcase and celebrate trainee accomplishments (i.e. Researcher Day, Rising Star awards); (vii) Access to funding and partnerships for professional skills development programs, such as Mitacs Training, the Faculty of Graduate and Postdoctoral Studies Pathways to Success, and the UBC Centre for Teaching, Learning and Technology; and (viii) Information sharing via a dedicated webpage on the BPI website.

BPI Equity Performance Metrics will include: (quantitative) trainee applications, internships, student completions, completion times, identification of student career paths post-training; (qualitative) regular feedback from trainees
and faculty analyzed for program improvements, and tracking implementation of equity practices, procedures and programs. To maintain ongoing course correction, a subcommittee consisting of BPI research program team members will discuss recruitment targets and advancement plans based on a yearly survey of researchers, HQP and staff. BPI Scientific Steering Committee will enable the development and adaptation of specific E&I strategies with the support of existing UBC resources, including the Women’s Centre, E&I office, Associate Deans, First Nations House of Learning, UBC Access and Diversity Office and the International Student Office.

BPI Environmental Scan

In 2017, the BPI team implemented its own equity survey to provide a baseline from which to move forward in its recruitment efforts. It was sent to all professors and HQP on the BPI team and received over 85 responses.

Table A 1. Equity & diversity statistics. Proportion (%) of each designated group

<table>
<thead>
<tr>
<th></th>
<th>BPI Team (%)</th>
<th>UBC (%)</th>
<th>Canada (%)</th>
<th>USA (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Professors</td>
<td>HQP</td>
<td>Professors (All Faculties)</td>
<td>Students (Tri-faculty)</td>
</tr>
<tr>
<td>Visible Minorities</td>
<td>29%</td>
<td>45%</td>
<td>19%</td>
<td>20% (undergrad)</td>
</tr>
<tr>
<td>Women</td>
<td>21%</td>
<td>31%</td>
<td>40% (All faculty)</td>
<td>40%</td>
</tr>
<tr>
<td>Persons representing gender/sexual diversity (LGBTQ+)</td>
<td>n/a</td>
<td>17%</td>
<td>6.1%</td>
<td>n/a</td>
</tr>
<tr>
<td>Persons with disabilities</td>
<td>0%</td>
<td>2.4%</td>
<td>3.7%</td>
<td>n/a</td>
</tr>
<tr>
<td>Indigenous persons</td>
<td>0%</td>
<td>0.0%</td>
<td>1.3%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

Notes: BPI team data is from 2017 self-reported questionnaire. UBC data is from 2015 Equity & Diversity employment survey, UBC PAIR office. USA data is from NSF (US National Science Foundation) 2015 survey of college graduates.

The BPI team is progressing satisfactorily in the recruitment of visible minority trainees, with 45% of respondents self-identifying as such and nine different ethnic groups currently represented. Considering professors only, 29% are visible minorities, exceeding UBC’s overall average, and the CRC target of 15%. The BPI team recognizes the need for further fair representation, and is encouraged by the fact that the participating faculties have seen significant increases in female hiring in recent years; for example, Forestry has recruited nearly equal numbers of female and male faculty from 2005 to 2015, and Science has increased its pool of female assistant professors from 22% in 2008 to 43% in 2013. APSC, cognizant that engineering has traditionally been a male-dominated field, is taking steps to increase the pipeline for future female professors through initiatives such as the Goldcorp Professorship for Women in Engineering, mandated to increase female enrollment in engineering to parity by 2020. The BPI team is also very excited and pleased that Dr. Emily Cranston, CRC T2 in Bio-based Nanomaterials, has joined the BPI as the Presidents Excellence Chair in Forest BioProducts, serving as a stellar role model for female HQP and potential new female faculty. 17% of the BPI HQP team self-identified as persons of sexual/gender diversity, which is significantly higher than the UBC professor cohort as a whole, the only comparator data available. The BPI team recognizes that there is room for improvement in the recruitment of persons with disabilities (2.4%) and Indigenous persons (0%), and it plans to consult with the UBC EIO, Access & Diversity (services specifically for persons with disabilities), the First Nations House of Learning, and the tri-faculty’s own Indigenous coordinators, to discuss strategies for recruiting these underrepresented groups to the team.
Appendix 2: BPI Indigenous Strategy – still in development

On the institutional, faculty and departmental levels, UBC has made a commitment to develop ethical policies and programs for Indigenous research and training. Many of the resources available have been outlined in UBC’s 2018 Indigenous Strategic Plan (ISP), which makes an explicit commitment to support researchers wishing to engage with Indigenous groups as well as Indigenous students, scholars and staff at the university.

The ISP emphasizes a need on UBC’s part for respectful, collaborative and equal partnerships with Indigenous communities, and this need is supported, at the Institutional level, by resources such as the Indigenous Research Support Initiative (IRSI) and the Indigenous Advisory Committee, a group of 5 Indigenous community members who are part of IRSI’s governance structure; the First Nations House of Learning (FNHL); and, at the Okanagan campus, the Institute for Community Engaged Research, the Indigenous Community Liaison, and an Aboriginal Advisory Committee.

The Indigenous Forestry Initiative, for instance, provides opportunities for Aboriginal students through innovative programs, student awards and scholarships, engaging material and the Aboriginal Portal, providing a central source of information and stories of interest to Indigenous students. Overall strategic direction is provided by the Faculty of Forestry’s First Nations Council of Advisors that meets at least once annually to provide advice on research projects of relevance to Indigenous groups. The Faculty also employs a full-time program Manager for Indigenous Initiatives who provides a bridge between the research and teaching programs of faculty members and Indigenous communities, administers a seed-fund to foster mutually-beneficial research projects, and offers regular seminars on engaging Indigenous communities in research. The Dean of Forestry also sits on the UBC-wide ISP Implementation committee.

In the faculty of Applied Science, the Geering Up! Science and Engineering education program and the Indigenous Community Planning program are both designed to engage with and provide opportunities for Indigenous students, researchers and staff. Amongst other initiatives, the Faculty of Science is currently working to establish the Aboriginal Fisheries Research Unit, from which learnings about the community consultation process, educational and outreach activities have been gained.

The BPI Scientific Director, Prof. Rojas, fully embraces the principles of inclusion, gender equality and the inclusion of designated groups, including Indigenous individuals and their communities, in research. As a Hispanic, Dr. Rojas is himself a member of an underrepresented group and has participated in many leading roles to incentivize interest in STEM among young Black Americans and Hispanics. At North Carolina State University (NCSU), Dr. Rojas was an active member of the Society of Hispanic Professional Engineers (SHPE) and a mentor of NCSU chapter, during which time he helped to develop a number of activities designed for the over 50 student members of the organization. Dr. Rojas’ experience and unique perspectives will certainly strengthen BPI’s developing EDI and Indigenous strategies.

BPI realizes and appreciates the complexity, time and resources required to respectfully and ethically engage with Indigenous communities, researchers and students. Shortly after joining UBC, Dr. Rojas and other senior BPI leadership, through the working of BPI Scientific Steering Committee will meet with key personnel, including the Indigenous coordinators and Advisors embedded within the BPI faculties (for example Forestry’s Indigenous Initiatives program manager), the Associate Director of IRSI, UBC’s Senior Advisor to the President on Indigenous Affairs, and the Director of the FNHL, to initiate development of best practices to engage and recruit Indigenous students, connect with Indigenous scholars at UBC, and start working with Indigenous groups in BC and Canada. We plan to develop and implement an Indigenous strategy which includes a concrete actionable tasks and timeline, and the recruitment an ‘EDI’ role as part of the CERC and BPI plan (equity, diversity, inclusion &
Indigenous strategy). As part of this strategy, BPI will improve its outreach with Indigenous communities via in-person engagement to understand the needs and priorities in forestry/bioproducts. BPI will also invite Indigenous seminar speakers (e.g. Mr. Albert Gerow, Director, Chinook Community Forest Burns Lake) to BPI/HQP to discuss relevant topics, and present to high school/earlier students to discuss BPI, the future bioeconomy and how they could participate.

BPI strategy is to be open and inclusive. BPI has recently formed alliances with Indigenous communities in Bella Bella and Haida Gwai, including a student experiential learning program in which HQP will live in and engage with the community for a period of time. We will actively seek alliances with additional communities, bands and Nations, such as the Musqueam, on whose traditional territory UBC-Vancouver is located, in order to identify unique opportunities and collaborate. BPI has also initiated programs, such as the ‘Rising Star’ award for Indigenous and women faculty and students, and a mentorship program. Additionally, Mr. Gerow has been engaged to the BPI-led national BiRNet Board of Directors.

BPI will also benefit from its close partnership with FPInnovations (FPI), Canada’s leading forest-products research institute, who are providing significant support to its programs. Under the National Director for Indigenous Strategies, FPI supports a $5 million/year Indigenous outreach and innovation program, which could provide a funding mechanism for BPI’s planned Indigenous outreach and research strategy.
Appendix-3: Administrative Review and Approval Process

During the spring, summer and fall of 2019, the BioProducts Institute core team, responsible for the development of proposal to become a Global Research Excellent Institute (GREx), sought a broad engagement with the Faculties, the office of the Vice-President Research and Innovation (VPRI) including the Research Innovation Council (RIC) and the Institutional Programs Office (IPO), the VP students, the Provost Office, UBC Engineering Undergraduate Society (AUS), Applied Science Student Senator, the Graduate Student Society, and the Committee of Deans.

The engagement process involved consultations with the following groups:

1. Individual faculty members working in areas related to the BioProducts portfolio.
   - Throughout the proposal development, the BPI core team held multiple consultations with members from the Faculties of Applied Science, Forestry, Science and Land and Food Systems in order to receive feedback on their involvement in the scientific program, the scope of scientific program, BPI activities and operational structure.
   - A total of 27 Faculty members from all four Faculties actively participated in the consultation.
   - This process resulted in a bottom-up approach in the development and refinement of the institute vision, mission to address global challenges through the interdisciplinary teams organized across four research themes, and the draft proposal.

2. The Vice-President Research and Innovation (VPRI) including the Research Innovation Council (RIC) and the Institutional Programs Office (IPO)
   - In the summer and fall of 2019, the BPI core team consulted with members of IPO on the budget plan and administrative matters related to the financial operation. Feedback from IPO was incorporated into the proposal, most notably the recommendation to create a financial coordinator role which will report directly to the IPO and work as an integral part of the BPI team in order to maintain independent financial oversight.
   - A draft proposal was shared with the VPRI and the associate VPRI for review. Their feedback on the overall plan, governance and budget was incorporated into the final proposal, which was submitted to Research Innovation Council (RIC).
   - On October 29, 2019, the BPI core team presented the proposal to RIC and answered questions from members of the council. The presentation was well-received and RIC recommended the VPRI to support BPIs GREx status application.
     - RIC provided feedback, including (a) a suggestion for modification to the proposal before submission to the Senate, and (b) suggestions to consider as the BPI team develops the Institute.
       - (a) A suggestion by RIC to improve clarity on the inter-relationships between the four research themes in the proposal was incorporated in the final proposal.
       - (b) The Council suggests:
• considering how to integrate social scientists into BPI work and to consider policy frameworks and directions earlier rather than later. One idea that was floated was for the BPI to apply for and support dedicated grants for social scientists to become involved.
• considering a research rotation program for graduate students to further their education and training and to enable enhanced connections between themes.

After receiving the support from the VPRI office, a subsequent meeting was held on Nov. 19, 2019 between the BPI team, VPRI office, the Dean of Forestry and the Dean of Applied Science, to determine the broad consultation steps required before putting forward the proposal to the Senate Academic Policy committee. These steps included consultations with the groups below.

3. Broad consultations with the Faculty of Applied Science, Faculty of Science, Faculty of Forestry and the Faculty of Land and Food Systems

Faculty of Applied Science (APSC):
• Consultation with the APSC Budgets, Heads and Directors (BHD) committee was held on Nov. 13, 2019.
• The BPI team gave a presentation and participated in a Q&A session.
• The group discussed future opportunities for more APSC faculty members to participate in BPI activities and lab space sharing to enhance collaboration within the Pulp & Paper Building.
• The committee unanimously approved APSC support to BPI’s application to become a GREx institute pending a 2-week review period for faculty members to raise any questions or concerns they may have. No such questions were raised during the 2-week period.

Faculty of Forestry:
• Consultation with the Forestry Faculty Council was held on Nov. 7, 2019.
• Dean John Innes presented the request to the Council.
• There was discussion of the significance of GREx recognition since there is only one existing GREX institute at UBC - the Stewart Blusson Quantum Matter Institute. Further, the collaborative nature of BPI involving faculty members from the four core faculties of Forestry, Land and Food Systems, Science and Applied Science was emphasized to the Council. The formalization and administrative support were highlighted in the discussion as an outcome of a formal Institute that would result in significant research outcomes.
• The Faculty Council voted on and carried unanimously the motion of the BPI be move up to the GREX stage.

Faculty of Land and Food Systems (LFS):
• Consultation with LFS Core team was held on Dec. 12, 2019.
• The BPI team presented an overview and participated in a discussion.
• The group discussed opportunities for additional LFS faculty members to participate in BPI activities, and upcoming research grants, e.g. New Frontiers - Transformation. There are opportunities to collaborate and mutually benefit from successful grant applications and project execution.
• The LFS Core team unanimously voted to support BPI’s GREx application.

Faculty of Science:
• Consultation took place at the Heads and Directors committee meeting on Dec. 18, 2019.
• The BPI team presented to the committee and participated in the discussion.
• The committee expressed support to BPI. A comment related to opportunity for BPI to leverage expertise from faculty members in the Institute for Resources, Environment and Sustainability (IRES) on identifying societal and environmental implications to bioproducts was raised by a representative from IRES. This was viewed as a positive engagement that will help to strengthen BPI activities at an early stage.
• The committee provided a tentative approval for the Faculty of Science to support BPI’s GREx proposal, subject to a follow up consultation meeting with representatives from IRES to identify ways to collaborate.
  o A follow up meeting was held between the BPI core team, the IRES director and an IRES investigator on Jan. 20, 2020.
  o The group discussed IRES’ expertise related to societal and environmental considerations for new technologies. The group also identified ways for IRES to participate and contribute to BPI activities, as research collaborators and in an advisory role.
  o The IRES Director reported back to the Dean of Science that IRES supports BPI’s proposal to become a GREx institute.

4. Consultations with Undergraduate and Graduate students.

Undergraduate students:
• After consultation with VP Students and the Provost Office, it was determined that reaching out to students who may be interested or potentially feel impacted by the proposal would be beneficial.
• From this conversation the BPI team elected to reach out to the EUS VP Academic and APSC Student Senator to determine if this was of broad interest to the Engineering Undergraduate Students, specifically asking whether they felt deeper consultation was needed.
• A copy of a 2 page briefing note outlining the purpose of the centre was provided and we offered the opportunity to answer any additional questions, and suggest additional consultation.
• Both of the student contacts suggested that due to the limited impact on the undergraduate students (no curriculum or UG programming), additional consultation would not be required.
The outcome of the discussions suggested that full consultation with undergraduate students would not be needed, for this reason we did not reach out to undergraduate students in other supporting faculties.

Graduate Students:
- The Graduate Student Society (GSS) was contacted and provided with a copy of the 2-page briefing note.
- The BPI team offered an opportunity for meetings and answering of any questions.
- A response from the GSS President was received, stating that he anticipated GSS would want to know more about the structures that might be in place to ensure that the graduate students have appropriate funding and work spaces.
  - We provided a clarification that Graduate students would be members of the Faculty of their supervisor and would be subject to all the standard best practices and policies for those units, including ensuring that students meet the minimum funding requirements and be provided with adequate work spaces. No further concerns were raised.

5. Consultation with the Committee of Deans (CoD)
- Consultation took place at the Committee of Deans meeting on Feb. 12, 2020. The meeting was chaired by the Provost with participation of all of the 12 Deans.
- The BPI Scientific Director introduced the institute’s vision, along with the Vice President of Research and Innovation (VPRI) who provided a strong support for BPI to become GREx. The Scientific Director and the VPRI then participated in a discussion with CoD.
- The Deans were supportive of BPI’s vision and plan. They asked if the presentation document would be allowed to share within their respective faculties because it could serve as a good example for other GREx application to follow. The Scientific Director agreed to share. Notable discussions include:
  - The Dean of Graduate and Postdoctoral Studies and Vice-Provost, expressed a strong support and an intention to further meet with the Scientific Director to explore ways to collaborate.
  - The Dean of Sauder School of Business praised the presentation and offered to connect BPI with the Creative Destruction Lab West (CDL – West) to further integrate with business and entrepreneurship.
  - A discussion on the BPI led global initiative, the Boreal Alliance, led to identification of possible collaborators in Russia and Alaska regions.
  - There was a strong interest in the inclusion of arts in the interdisciplinarity principle of BPI-GREx vision.
- The CoD expressed their unanimous support to the BPI’s application to become GREx.
Date: March 11, 2020

To: UBC Vancouver Senate

From: Andrew Szeri, Provost and Vice-President Academic

Re: Designation of the BioProducts Institute as a Global Research Excellence Institute

Recommendation:

I recommend that Senate designate the Bio Products Institute as a Global Research Excellence Institute, effective May 1, 2020.

About BPI
UBC BioProducts Institute (BPI) research cluster builds on many years of research effort and capital investments, undertaken at UBC and its research partners, to discover the building blocks and viable pathways, from renewable and sustainable biomass to our society’s future bio-based materials, chemicals and fuels. BPI research cluster research centres around five theme areas:

- Biomass feedstock and processing
- Advance bio-composite materials
- Functionalization of biomass-sourced small molecules
- Biochemicals, Bioenergy and Biofuels
- Policy and Management

Our Vision
The UBC BioProducts Institute develops science and know-how to deliver bio-based solutions for a sustainable circular bioeconomy.

Our Mission
An international research organization that brings together universities and colleges, industry, and governments to provide a world-class demonstration facility in British Columbia:

- transform Canada’s sustainable bio-based resources from forestry and agriculture
- address the critical technical and social license barriers to bio-economy success
- create the next generation of bio-economy leaders through leading-edge educational programs
- de-risk innovative and impactful bio-product processes, outputs and markets
The application of emerging biocatalysts, supplemented with world-leading catalytic polymer chemistry, provides the potential to create molecular engineered and functionalized nano-, fibre and polymeric composite materials at the global vanguard of science that will revolutionize products we use in our daily lives from biomedicine to transportation.

Collaborators and Partners in Development
Developing and nurturing BPI’s relationships with its partners, industry and key stakeholders is imperative to ensure that BPI effectively participates in the global bioeconomy. BPI has a number of national and international initiatives underway, two current major initiatives are:

- **BioInnovative Renewables Netork (BiRNet):** As part of its national strategy, BPI is expanding its national research collaborators by leading the establishment of BioInnovative Renewables Network (BiRNet), to advance the national research agenda for the bioeconomy focused on advanced high-value biobased materials and chemicals.

- **BC Pulp and Paper BioProducts Alliance:** A formal partnership between BPI and FPInnovations—the world’s largest non-for-profit forest sector innovation and commercialization organization—the Alliance champions innovation of advanced bio-based materials and bio-products for the British Columbian pulp and paper industry.

Governance and Operational Structure
After a broad consultation, including with the QMI, GREx, BPI is recommending a combined faculty/non-faculty senior leadership team structure. As a GRE Institute, governance, operational leadership and external review vehicles will provide effective management of scientific direction, research priorities, and independent financial oversight from UBC-IPO. The proposed structure will enable BPI to leverage the significant collective experience of the VP of Research and Innovation, the Research Innovation Council, Deans of the associated Faculties, PIs and the management team in designing and leading large-scale collaborative research and training programs and impactful academic/industry partnerships.

The UBC CERC in Forest BioProducts, Dr. Rojas, will be the Scientific Director of the BPI, defining and leading a cohesive research program across all PIs and HQP. With an emphasis on developing BPI into an internationally exceptional institute, the Scientific Director will place significant emphasis on externally facing matters, interfacing with international networks and creating new multi-national initiatives. The Scientific Director will be supported by Theme Leaders, the Operations director and the Business Development Director. Together, they will ensure BPI’s research excellence by strengthening UBC’s academic and industrial collaborations through international networks, leading large research grant applications, and attracting the
highest quality researchers and trainees to the BPI.