1. Senate Membership – Dr Kate Ross
   Resignation of Prof. Isabel Grant, Faculty Representative for the Faculty of Law

2. Minutes of the Meeting of 21 January 2015 – Prof. Arvind Gupta
   (approval) (docket pages 4-14)

3. Business Arising from the Minutes - Prof. Arvind Gupta

4. President’s Remarks - Prof. Arvind Gupta

5. Candidates for Degrees - Prof. Arvind Gupta
   The list as approved by the faculties of Graduate & Postdoctoral Studies and Medicine is available for advance inspection at Enrolment Services, and will also be available at the meeting.

   The Chair of Senate calls for the following motion:

   That the candidates for degrees, as recommended by the faculties, be granted the degrees for which they were recommended, effective February 2015, and that a committee comprised of the Registrar, the dean of the relevant faculty, and the Chair of Senate be empowered to make any necessary adjustments.

   (2/3rds majority required).

6. Candidates for the Degree of Master of Digital Media - Prof. Arvind Gupta
   The list as recommended by the Great Northern Way Campus and the Faculty of Graduate & Postdoctoral Studies is available for advance inspection at Enrolment Services and will also be available at the meeting.

   The Chair of Senate calls for the following motion:
That the candidates for the degree of Master of Digital Media, as recommended by the Faculty of Graduate and Postdoctoral Studies, be granted the degree effective upon the concurrence of Simon Fraser University, Emily Carr University of Art + Design, and the British Columbia Institute of Technology: and that a committee comprised of the Registrar, the Dean of the Faculty, and the Chair of the Senate be empowered to make any necessary adjustments.

(2/3rds majority required)

7. Admissions Committee – Dr Robert Sparks
   a. Enrolment Targets 2015-2016 (approval) (docket pages 15-22)

8. Admissions & Curriculum Committees – Dr Robert Sparks/ Mrs Carol Jaeger
   a. Curriculum Proposal from the Faculty of Applied Science: Applied Professional Master’s Program – Subject Code and Platform Courses (approval) (docket pages 28-38)
   b. New Degree Program: Master of Engineering Leadership in Advanced Materials Manufacturing (approval) (docket pages 39-78)
   c. New Degree Program: Master of Engineering Leadership in Clean Energy Engineering (approval) (docket pages 79-125)
   d. New Degree Program: Master of Engineering Leadership in Naval Architecture and Marine Engineering (approval) (docket pages 126-165)

9. Curriculum Committee – Mrs Carol Jaeger
   b. Graduate Certificate in Global Surgical Care (information) (docket pages 221-226)
   c. Graduate Certificate in High Performance Coaching and Technical Leadership (information) (docket pages 227-239)

10. Nominating Committee – Dr Richard Tees
    a. Adjustments to Committee and Council of Senates Appointments (approval)(docket page 240)
    b. Change to Committee Composition (approval) (docket page 241)

11. Student Awards Committee – Mr Graham Beales
    New and Revised Awards (approval) (docket pages 242-248)
12. Report from the Registrar – Dr Kate Ross

2015/2016 Academic Year (information) (docket page 249)

13. Report from the University Librarian – Dr Ingrid Parent

Annual Report of the University Librarian to Senate (information) (docket pages 250-275)

14. Other Business

15. IN CAMERA – Tributes Committee – Dr Sally Thorne

Candidates for Honourary Degrees (approval) (circulated at meeting)

Section 16 (b) of the Rules and Procedures of the Vancouver Senate states that meetings will adjourn no later than 8:30 p.m. Regrets: Telephone 604.822.5239 or e-mail: facsec@mail.ubc.ca

UBC Senates and Council of Senate website: http://www.senate.ubc.ca
VANCOUVER SENATE  
MINUTES OF 21 JANUARY 2015  

DRAFT

Attendance

Present: Prof. A. Gupta (Chair), Dr K. Ross (Secretary), Mr T. Ahmed, Dr R. Anstee, Dean G. Averill, Dr S. Avaramidis, Mr A. Bailey, Dr K. Baimbridge, Ms E. Biddlecombe, Dean M. Bobinski, Dr L. Burr, Mr Casey Chan, Ms M. Chartrand, Dr P. Choi, Dr A. Collier, Dean M. Coughtrie, Ms A. Daulat, Dr A. Duly, Dr A. Dulfay, Dr W. Dunford, Dr D. Farrar, Dr S. Forwell, Dean B. Frank, Ms B. Gershkovitch, Dr J. Gilbert, Dr D. Gillen. Ms S. Gurm, Mr S. Haffey, Dr P. Harrison, Dean R. Helsley, Dr J. Innes, Mrs C. Jaeger, Ms J. Jagdeo, Dr P. Keown, Ms A. Kessler, Dr B. Lalli, Mr H. Leong, Mr C. Leonoff, Dr P. Loewen, Mr K. Madill, Dr P. Marshall, Dr C. Marshall, Mr W. McNulty, Dr P. Meehan, Mr D. Munro, Dr C. Naas, Dr I. Parent, Dean M. Parlane, Dean S. Peacock, Dr N. Perry, Dr G. Peterson, Dr J. Plessis, Dean S. Porter, Dr C. Roach, Dr L. Rucker, Dr C. Ruitenbergh, Dr B. Sawatsky, Dr T. Schneider, Dean C. Shuler, Dr S. Singh, Dr R. Sparks, Ms S. Sterling, Dean G. Stuart, Dr R. Tees, Dr S. Thorne, Ms S. Vohra, Dr L. Walker, Dean R. Yada, Mr E. Zhao.

Regrets: Dr P. Adebar, Mr G. Beales, Ms Collyn Chan, Prof. B. Craig, the Rev. Dr C. Godwin, Prof. B. Goold, Chancellor L. Gordon, Dr F. Granot, Prof. I. Grant, Dr A. Ivanov, Ms N. Karimi, Dr S. Knight, Ms M. Maleki, Dr L. Nasmith, Dr C. Nislow, Dr A. Riseman, Dr K. Thieme, the Rev. Dr R. Topping, Mr J. Weibe, Dr R. Wilson, Dr D. Witt.

Recording Secretary: Mr C. Eaton.

Call to Order

The Chair of Senate, Professor Arvind Gupta, called the fifth regular meeting of the Vancouver Senate for the 2014/2014 academic year to order at 6:06 pm.

Senate Membership

The Registrar, Dr Kate Ross, introduced Mr Kevin Madill, Representative of the Professional Librarians, to fill a vacancy.

Minutes of the Previous Meeting

William McNulty  
Richard Tees  

That the Minutes of the Meeting of 17 December 2014 be adopted as corrected:

Senator Burr was mistakenly identified as Senator Berg.

Approved

Remarks from the Chair
The President wished Senators a happy new year, noting that he and his administration had been occupied heavily of late with budget and financial planning activities. The President informed Senate of his recent activities, noting that he was spending around half his time on UBC’s two campuses, 30% meeting with external stakeholders, and 20% with various levels of government. He noted that in the past three weeks, he had met with the faculties of Dentistry, Forestry, Medicine, and Pharmaceutical Sciences, as well as with several departments in the larger faculties. He further mentioned that in December he was in Hong Kong to meet with donors and alumni, as well as spending time with the University of Hong Kong (HKU). Professor Gupta mentioned that HKU was very proud of its joint program with Law, and that there may be opportunities for further collaboration.

The President advised that he had recently met with the Honourable Andrew Wilkinson, our new Minister of Advanced Education, and that it was clear to him that Minister sees UBC as a provincial success story with many shared priorities between UBC and the Province. Professor Gupta noted that the Minister made a point of stressing the importance of UBC having a balance budget to the Province. In terms of other government meetings, Professor Gupta advised that he had also met with Metro Vancouver officials to discuss the transit situation and with a variety of party leaders, parliamentarians, and officials in Ottawa in run up to the Federal elections.

For the Budget, the President advised that the 2008/9 recession and the lack of a robust economy post-recession has severely impacted government finances. From UBC’s perspective, our per-student funding has shrunk in absolute dollars and shrunk significantly given inflation. Professor Gupta suggested that UBC, along with other universities, had assumed that the Economy would recover and tried to keep business as usual by spending down from reserves while it waited for the economy to recover and funding to be restored. He suggested now that the reality of our situation is that we cannot just hope for a new trend of improved funding, and that while Province has been doing its best to preserve Health and Education, it is clear that healthcare will continue to grow in the provincial budget to the detriment of other sectors. Professor Gupta further opined that UBC now had two kinds of structural deficits, fiscal and faculty/academic. In regards to that latter, he suggested that it was critical for UBC to build its budget to maintain and grow our excellence while planning for limited government capacity to further assist UBC. The President noted that at the September Board meeting, both deficits were discussed and he expressed his thanks for the administration working together to produce a balanced budget plan and to try to mitigate any cuts at the faculty level.

Professor Gupta suggested that if UBC could develop a multi-year sustainable fiscal framework then it could think about the resources needed to deliver our strategic priorities: research, with the Canada First Research Excellence Fund (CFREF) focusing on a smaller number of excellent institutions; teaching & learning, looking at flexible learning and new types of programs; international, making jump start a permanent program, expanding summer programming, and encouraging growth in international students; innovation, reaching out to off-campus stakeholders to develop innovation partnerships; and integration and engagement between our campuses.

Senator Singh asked where we were with our international strategy and where the President thought we should be in 5 years.
The President replied that our current strategy was sound, but we needed further planning to see what specific actions we can take to deliver on our aspirations. He suggested that UBC had good relations with other universities, but noted that when they come to us with a specific list of activities where they would like to build partnerships, UBC has nothing specific ready in response. Professor Gupta advised that he had struck an ad hoc group to consider this matter further.

Senator Singh suggested that we needed a clear understanding of what UBC needed in these interactions.

The President agreed, but noted that the difficulty would be finding common understandings internally before trying to find them around the world.

Senator Bailey asked if CFREF funding was directed or general.

The President replied that he did not know what instructions the government had given the peer review panel beyond “being of benefit to Canada,” but that some examples given were leading in certain directions. He suggested that UBC needed to decide our strategy and then look at where we could find funding for our goals.

The Provost added that we were in a good place for the first proposal, with 300M over 7 years expected to go to 3 to 5 Universities.

From the Board of Governors

The President confirmed that material from the following meetings as approved by Senate were subsequently approved by the Board of Governors as required under the University Act:

17 September 2014

Curriculum Proposals from the Faculty of Arts
New Program Options:
BA, BFA, BIE, BMS, BMus, BKin, BSc (WPP)/MM Dual Degrees
BKin/BEd Dual Degrees
New Awards
Establishment of the Simons Chair in Disarmament, Global and Human Security

15 October 2014

Curriculum Proposals from the Faculty of Medicine
New and Revised Awards

19 November 2014

Curriculum Proposals from the Faculty of Education
New and Revised Awards
New Degree Program and Associated Courses: Master of Public Policy and Global Affairs
Change in name from the Brain Research Centre to the Djavad Mowafaghian
Centre for Brain Health

Joint Report from the Council of Senates Budget Sub-committee and the Senate Academic Building Needs Committee

PRESENTATION ON LEARNING SPACES
The Senate Academic Building Needs Committee Chair, Dr Robert Sparks presented.

Senator Sparks spoke of the work done by the committees in evaluating our learning spaces. Paramount to the committees’ concerns was the loss of the Provincial Annual Capital Allowance (ACA). He noted that until 6 or 7 years ago UBC used that fund for most of its building upgrades; however, 5 years ago the Province drastically reduced it, and then largely did away with the fund in subsequent years. With consent of Senate, he then introduced Jodi Scott and Angela Redish to further present.

Dr Redish noted that UBC has 337 General use classrooms and 175 restricted classrooms. All labs are restricted, 211 are scheduled and 175 are drop in. Labs included gyms, studios, practice rooms etc.

Ms Scott advised that based on 2013W data, we considered room utilization. Government targets were 56% for classrooms and 40% for labs. Looking at our general use rooms, we are below the target range for small classrooms (anything lower than 50), but we are above it for any large classrooms, with rooms over 300 close to 80% utilization. She further noted that 8 am is our lowest utilization time, with between 10 am and 2 pm being highest. Based on our review of restricted space, due to corrections in classifications we found a decrease in UBC’s teaching space. From this process we learned that our inventory was out of date, but our usage of small classrooms is very low. Many faculties exceed ministry space standards for labs, perhaps reflecting changing teaching practices. The report also indicated many inconsistencies in the data. Ms Scott then noted that a third report done was on room ratings for general use rooms. A student evaluated them on a score of 5 and also considered maintenance issues.

Dr Redish suggested that our future priorities for space were better scheduling, flexible learning, and budget.

For scheduling, she noted that we recently transitioned from Ad Astra to Scientia, and this new generation of software has much greater capacity (which we are not yet using). We are also reviewing the scheduling guidelines to facilitate better use of our space and this software.

For flexible learning, this requires the use of all kinds of space. The best classroom design allows for interaction and we need to ensure that our current and new spaces can be adaptable to changes in instruction.

For Budget, Dr Redish noted that this was the toughest area for UBC’s classroom inventory. As Dr Sparks noted earlier, UBC has had essentially no ACA funding since 2010 and our current funding of $1.5 M is less than 1% of our building value for general use classrooms. For 2016 we
have a strategic plan for reinvesting in learning spaces and hope to have an incremental $1 M budget for analogue to digital updates and large theatre renewal.

Dr Redish advised that for the Vancouver campus, learning spaces were managed by the Provost’s office, facilities planning, Enrolment Services, and IT Services. We also have a variety of committees who advise: the Advisory Committee on Learning Spaces, Informal Learning Space Committee, and the Flexible Learning Space Committee.

Senator Marshall noted that “no use” was a category but in fact many “no use” classrooms are being used as informal learning spaces by students.

Ms Scott agreed, noting that unlike many universities we left our classrooms open and promoted their use when not scheduled.

Senator Kessler agreed with Dr Marshall in describing “no use” classroom time as informal learning spaces. She further noted that we did an extensive inventory for classroom and asked if we could do the same for informal learning spaces.

Senator Forwell suggested that we rethink “informal” learning space, and review it as peer-to-peer or group learning, nothing that in the ways we are teaching we are trying to give students that autonomy to learning as they learn best. We do ourselves a disservice to call it informal. She suggested we needed to help the government understand how teaching was shifting.

Senator Tees said it would be important to educate the government on how our space was really used, as “no use” did not appropriately describe the heavy-yet-unscheduled use at all hours of UBC facilities.

Nominating Committee

The Committee Chair, Dr Richard Tees, presented.

COMMITTEE MEMBERSHIP ADJUSTMENTS

<table>
<thead>
<tr>
<th>Richard Tees</th>
<th>Richard Anstee</th>
<th>That Dr Stanley Knight be appointed to Senate Curriculum Committee until 31 August 2017 and thereafter until replaced, to replace Dr Andrea Dulay; and</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>That Dr Rickey Yada be appointed to the Senate Academic Policy Committee until 31 August 2017 and thereafter until replaced, to replace Dr Thomas Schneider.</td>
</tr>
</tbody>
</table>
ADJUSTMENTS TO COMMITTEE COMPOSITIONS

Richard Tees
Sue Forwell

That the composition of the Senate Curriculum Committee be amended to delete:
• Representative, Continuing Education Division in the Health Sciences (voting)

Reports from the Provost

SUMMARY OF REVIEWS OF ADMINISTRATIVE/ACADEMIC UNITS

The Provost, Dr David Farrar, presented Senate with a summary of reviews of academic and administrative units over 2013/2014:

Faculty of Applied Science
   Department of Chemical and Biological Engineering
   Department of Mining Engineering
   Institute for Computing, Information, and Cognitive Systems

Faculty of Arts
   Arts Studies in Research & Writing Program
   Creative Writing Program
   Department of English
   School of Library, Archival, and Information Studies / Master of Library and Information Studies Accreditation Review
   Liu Institute for Global Issues
   School of Music

Faculty of Education
   School of Kinesiology Accreditation Review

Faculty of Graduate and Postdoctoral Studies
   Interdisciplinary Studies Graduate Program

Faculty of Medicine
   Department of Biochemistry and Molecular Biology
   Centre for Blood Research
   Brain Research Centre/ Centre for Brain Health
   Centre for Disease Control
   Centre for Health Services and Policy Research
   Master of Occupational Therapy Accreditation Review
   Department of Physical Therapy

Sauder School of Business (Faculty of Commerce & Business Administration)
AACSB Maintenance of Accreditation Review
EQUIS Accreditation Review

Faculty of Science
   Department of Earth, Ocean and Atmospheric Sciences
   Department of Microbiology and Immunology
   Department of Statistics

UBC Information Technology

With consent of Senate, Hugh Brock spoke to the report. Firstly, he noted that units and reviewers put a lot of work into reports, but he hoped to help them achieve shorter and more useful self-studies. Secondly, our current instructions were long and complex, and data oriented rather than conclusion oriented. This year, he noted that he was seeing much better examples, specifically citing good work from the Faculty of Science.

Senator Baimbridge noted that all unit reviews were on 5 year cycles, and he suggested that in many cases we saw the same recommendations repeat review after review. He asked if the Provost’s office had a process for mid-cycle processes to see if we were actually dealing with issues noted in reviews.

Dr Brock replied that the policy did dictate a 2-year later check in, but this was the least consistently applied part of the policy. Most units can show demonstrable progress, but some issues were perennial. He suggested that he did not want to overregulate, but we are investing a lot of time and money into this effort and we should make the best use of it.

Senator Baimbridge suggested that we need to be harder on enforcing this check in.

Senator Forwell agreed, noting that that some issues featured in reviews repeatedly and sometimes reviewers even noted that previous review recommendations had not yet been acted upon.

Dr Brock replied that one issue was that presently we don’t identify whose responsibility it is to check up in responses to reviews.

The Provost replied that part of good governance was bringing this back to Senate regularly, but a number of deans are starting to look and implement aspects of reviews more stringently.

REPORT ON STUDENT EVALUATIONS OF TEACHING
The Provost noted that this was the first year when we have seen a positive increase in student evaluations of teaching under the new evaluation system.

Senator Dunford asked about the inclusion of an evaluation of learning outcomes in evaluations.
The Provost replied that we could bring the issue of learning outcomes to Senate if useful.

Senator Bailey noted that 7000 evaluations were submitted and asked if this was the student total or the total number of classes evaluated. Dr Brock confirmed the latter. Senator Roach asked what happened when a professor had numerous poor reviews.

The Provost replied that this was rare. The process starts in the department where there are many resources available with support from the central administration in areas like the Centre for Teaching, Learning and Technology. If the problem is chronic, deans will engage and it does come forward when Tenure and Promotions files are considered.

Dr Brock added that this should be the signal that a discussion was needed to help that faculty member improve their teaching in the first instance.

Senator Ruitenberg noted that only 2/3rds of graduate courses were reviewed.

Dr Brock advised that this was largely due to small classes and the response rate.

Senator Singh asked if we ever reviewed the questions used, and he asked if the data showed 2013W to be statistically significant or not.

In response to the 2nd question, Dr Brock said there was enough data to be significant, it was just obscured due to rounding. For the first question, he noted that when the policy was developed it was agreed that 6 questions would be universal but faculties and departments were allowed to add their own questions.

Senator Singh stated that if we had a university initiative, such as flexible learning is, would questions in that area be a university level question or a faculty/department one.

Dr Brock Replied that that it was integral to the academic enterprise to know what worked and what did not for learning, and that it was essential to that to set a baseline.

Senator Kessler requested that a presentation on learning outcomes be made to Senate in the future.

The Provost agreed to consider the matter.

UPDATE ON UBC HEALTH

The Provost advised that a number of these initiatives would come to senate over the course of the next term. We have had around 2 years’ worth of discussions on how to do a better job in integrating health education, health research, and clinical responsibilities.

The original consultation was led by Gavin Stuart and Louise Nasmith and was focused on the idea of having a Faculty of Health. If you look back in UBC’s history there were 2 previous
considerations of that question, in the early 1970s and 1990s. Both times we elected to not have a Faculty of Health, and following an extensive consultation we once again came to that conclusion. However, growing out of those consultations came a consistent endorsement of the idea of UBC health and a coordinating office around health education, research, and clinical activities. What grew out of the 1990s review was the College of Health Disciplines, which originally had a coordinating mandate around health, but more recently has focused on interprofessional education. More recent discussions have been around how the Provost’s office can support this area. We’ve focused on the office of Vice-Provost Health and how that office could be strengthen to support health education and research as well as our clinical activities. We are presently looking for a new Dean of Medicine and we hope to complete that process in around six weeks. The Intent is to separate the decanal position from the Vice Provost medicine. Support of the Educational piece will be brought back to Senate to support what the College is doing now in the faculties and departments. The research aspect, particularly with the CFREF, which has a health component, has started to take shape, particularly with the AVP research. Finally, the clinical aspects are tied in to the healthcare delivery activities of the province. For the past year, an Assistant Deputy Minister in the Ministry of Health has been working on an Academic Health Sciences Network (AHSN) for BC.

The Provost suggested that the single greatest issue facing western democracies was the cost and support of healthcare. The United States (in 2008), United Kingdom (2012) and Australia (2014) have moved in the direction of AHSN. Common features were the alignment of education, research, and healthcare delivery. BC is unique in that UBC has the largest research university is spread across the entire province. This has put a lot of pressure on what UBC does to respond to the overall network that is forming.

The Provost concluded by noting that this matter would come back to Senate for further consideration later this term.

Report from the University Librarian

BASIL STUART-STUBBS PRIZE FOR OUTSTANDING SCHOLARLY BOOK ON BRITISH COLUMBIA

The University Librarian, Dr Ingrid Parent, presented.

Dr Parent noted that Basil Stuart-Stubbs passed away in May 2012. In his memory and to support the literary causes that he believed in, several friends and colleagues raised funds for an annual prize named in his honour.

Ingrid Parent
John Gilbert

} That Senate accept and forward to the Board of Governors for approval the establishment of the "Basil Stuart-Stubbs Prize for Outstanding Scholarly Book on British Columbia" to be awarded annually according to the attached guidelines. Approved
Other Business

MOTION ON REPORT FOR “SPORTS TARGETING REVIEW”

Sean Haffey  Richard Anstee

That the Senate request that the President initiate an independent study of the 'Sports Targeting Review' and present a report to the university on, or before, April 30, 2015. The report should draw upon data and opinion from the administration, staff, students, alumni and community and note the purpose, objectives, procedures, costs, results and value of the review to the university community.

The report should also reference the following questions of interest from representatives of the Alumni athletic community:

1. The Competitive Sport Model and the subsequent Sport Targeting Review have aimed to reduce varsity sports in order to enhance certain high-performance sports and add participation in competitive recreational club sports. The Review has been very controversial, divisive, and stressful for student athletes, staff, and alumni supporters. The University prides itself on the quality of its research. Reference should be made to the research base, including questionnaires and sampling methodology, used to validate the Competitive Sport Model and the subsequent Sports Review.

2. Given that the purpose of the Sport Review has been justified by a supposed lack of financial stability in the existing program references must be made to the costs involved in: generating the Competitive Sport Model, conducting the Sport Review, managing the resultant negative media coverage, managing the legal suit brought by the students of the UBC Softball team, renovations to the Athletics and Recreation offices, the basement of Memorial Gym, and the hiring of additional staff.

3. Freedom of speech is an important component of the university community. Comment is required on reports that student athletes have felt intimidated by the Sport Review and athletic coaches and staff have apparently been advised not to discuss or comment on the Review.
Senator Haffey noted that Senate previously rejected Senator Knight’s proposal for a committee on this topic, but he suggested that aspects of the sports targeting review had negative outcomes for UBC that should be addressed for the future.

Senator Ahmed applauded the spirit behind the motion, but noted his opposition. He suggested that an alumna and donor of UBC had contacted him and was very bothered by how this process unfolded. He further noted that UBC had a perception problem with this process, but stated that he would rather leave judgment there with the President and said he did not think it was appropriate for senate to recommend as suggested.

Senator Tees reminded senators that in November the Nominating Committee recommended that a committee not be struck on this matter. The Nominating Committee did suggest that the VP Students report on an annual basis to ensure the Senate and the administration kept this matter in mind.

Senator Anstee suggested that the proposed motion was the best way to clear the air on this issue.

Senator Harrison stated that the sport review was not a senate initiative and that while he agreed with the Senate Nominating Committee’s suggestion to keep Senate engaged in the area of sports and recreation, he did not support directing the President to take the action recommended.

IN CAMERA – Report from the Provost

NAMING OF AN ACADEMIC UNIT

Adjournment

There being no further business, the meeting was adjourned at 8:10 pm.
6 February 2015

To: Vancouver Senate

From: Admissions Committee

Re: a) Enrolment Targets 2015-2016 (approval)(circulated)  
b) Bachelor of Education, Elementary Teacher Education – Changes in Admission Requirements (approval)(circulated)

---

a) Enrolment Targets 2015-2016 (approval)(circulated)

The Committee has reviewed and recommends to Senate for approval the proposed undergraduate enrolment targets for the 2015/2016 academic year, as outlined by Faculty, program and year level.

Motion: That Senate approve the 2015/2016 enrolment targets, as per section 27(2)(r) of the University Act, as outlined in Tables 1 and 4 of the attached report.

---

b) Bachelor of Education, Elementary Teacher Education – Changes in Admission Requirements (approval)(circulated)

The Committee has reviewed and recommends to Senate for approval changes in admission requirements for applicants to the Bachelor of Bachelor of Education Elementary Teacher Education program. Effective for entry to the 2016 Winter Session, the admission average will be calculated using the most recently taken 60 credits for course work. As outlined in the rationale for the proposed change, the most recent course work is an accurate representation of the applicant’s likelihood of success in the program. The proposed change will also align admission criteria for the Elementary Teacher Education option with other options with the Bachelor of Education program (Middle Year and Secondary options).

Motion: That Senate approve changes to admission requirements for applicants to the Bachelor of Education, Elementary Teacher Education program, effective for entry to the 2016 Winter Session and thereafter.

---

Respectfully submitted,

Dr. Robert Sparks  
Chair, Senate Admissions Committee
January 23th, 2015

To: Members of Senate Admissions Committee

From: Angela Redish, Vice-Provost and AVP Enrolment and Academic Facilities

Re: 2015-2016 Academic Year Undergraduate Enrolment Targets – UBC Vancouver

In this current academic year (2014/15) our Undergraduate Full Time Equivalent (FTE) enrolment is forecast to be 36,230, of which 30,322 are domestic student - which is approximately 771 FTE above our Provincial funded levels (Table 1).

The tables below provide three year enrolment projections and intake targets, based on strategic planning decisions undertaken at the Faculty level. Specific intake targets for undergraduate programs (reported as “headcount”) are set in consultation with the Dean’s offices of all Faculties. Intake targets take account of provincial government expectations regarding overall domestic enrolments (measured as full time equivalencies), the University’s strategic goals, and both the opportunities and capacities of units to provide first-rate education and support to students. In the absence of additional government funding, undergraduate domestic enrolment at the Vancouver campus will gradually decrease while remaining over government funded levels by approximately 718 FTEs by 2017/18 (Table 1).

For the forthcoming 2015/16 academic year, some Faculties have made small changes to domestic intake targets for undergraduate direct entry programs to adjust for over-enrolment flow-through from previous admission cycles. Enrolment in specific health related programs will also increase based on targets established in consultation with the provincial government (Medicine). Intake targets for international students (ISI) in direct entry programs vary by degree program and year level and overall have been increased by 2.9% versus 2014/15 actual intakes (Table 2).

UBC Vantage College accepted its first cohort of 188 International Program students in August 2014. Students chose from three academic streams: a Global Citizenship stream, incorporating curriculum from the first year of a Bachelor of Arts, or Bachelor of Science program in either Computational Sciences or Physical Sciences. Those who successfully complete the 12 month
program will transition directly into the second year of an Arts or Science degree in September 2015 (Table 3). Table 3 documents the target Vantage enrolment for the following 5 years. Notably, Vantage is planning to introduce two new programs for 2015/6, one in Applied Science and one in Management. The Applied Science stream will matriculate to a second year in either the Vancouver or Okanagan campus, while the Management stream is targeted at the Bachelor of Management program in the Okanagan. As of 2014-15, the forecast FTEs (Table 4) include students registered in their first year in Vantage College; and, as of 2015-16 include the students who matriculate into the second year of UBC degree programs in their respective faculties.

The numbers reported below have been reviewed carefully in all Faculties in consultation with the Provost’s Office, the Executive Enrolment Committee, the Office of Planning and Institutional Research, and Enrolment Services. Note that individual Faculties may re-distribute intake numbers between years 1-3 once we have additional information on admission applications and yield rates. Total new intakes in some Faculties may also be adjusted to meet our overall FTE targets.
### Table 1: UBCV Undergraduate Program Normal Load FTEs (Domestic)

#### Winter Session

<table>
<thead>
<tr>
<th>Faculty</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>3,392</td>
<td>3,480</td>
<td>3,386</td>
<td>3,310</td>
<td>3,185</td>
<td>3,038</td>
<td>2,906</td>
</tr>
<tr>
<td>Arts</td>
<td>7,546</td>
<td>7,639</td>
<td>7,450</td>
<td>7,271</td>
<td>7,643</td>
<td>7,663</td>
<td>7,704</td>
</tr>
<tr>
<td>Commerce</td>
<td>2,312</td>
<td>2,376</td>
<td>2,348</td>
<td>2,346</td>
<td>2,216</td>
<td>2,174</td>
<td>2,152</td>
</tr>
<tr>
<td>Dentistry</td>
<td>348</td>
<td>340</td>
<td>338</td>
<td>318</td>
<td>316</td>
<td>313</td>
<td>317</td>
</tr>
<tr>
<td>Education</td>
<td>1,774</td>
<td>1,729</td>
<td>1,798</td>
<td>1,871</td>
<td>1,930</td>
<td>1,914</td>
<td>1,908</td>
</tr>
<tr>
<td>Forestry</td>
<td>454</td>
<td>434</td>
<td>468</td>
<td>519</td>
<td>532</td>
<td>554</td>
<td>575</td>
</tr>
<tr>
<td>Law</td>
<td>540</td>
<td>528</td>
<td>535</td>
<td>523</td>
<td>531</td>
<td>533</td>
<td>534</td>
</tr>
<tr>
<td>Land and Food Systems</td>
<td>916</td>
<td>953</td>
<td>922</td>
<td>926</td>
<td>959</td>
<td>958</td>
<td>959</td>
</tr>
<tr>
<td>Medicine</td>
<td>2,318</td>
<td>2,393</td>
<td>2,485</td>
<td>2,595</td>
<td>2,558</td>
<td>2,556</td>
<td>2,564</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>704</td>
<td>773</td>
<td>847</td>
<td>923</td>
<td>938</td>
<td>939</td>
<td>942</td>
</tr>
<tr>
<td>Science</td>
<td>5,446</td>
<td>5,638</td>
<td>5,623</td>
<td>5,580</td>
<td>5,664</td>
<td>5,589</td>
<td>5,563</td>
</tr>
<tr>
<td>Non Degree &amp; Residents</td>
<td>962</td>
<td>858</td>
<td>883</td>
<td>853</td>
<td>867</td>
<td>867</td>
<td>867</td>
</tr>
<tr>
<td><strong>Grand Total (Winter)</strong></td>
<td><strong>26,713</strong></td>
<td><strong>27,142</strong></td>
<td><strong>27,083</strong></td>
<td><strong>27,034</strong></td>
<td><strong>27,338</strong></td>
<td><strong>27,099</strong></td>
<td><strong>26,991</strong></td>
</tr>
</tbody>
</table>

#### Summer FTEs

<table>
<thead>
<tr>
<th>Faculty</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grand Total (Winter + Summer)</strong></td>
<td><strong>30,039</strong></td>
<td><strong>30,453</strong></td>
<td><strong>30,357</strong></td>
<td><strong>30,322</strong></td>
<td><strong>30,626</strong></td>
<td><strong>30,387</strong></td>
<td><strong>30,279</strong></td>
</tr>
</tbody>
</table>

#### Funded*

<table>
<thead>
<tr>
<th>Faculty</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grand Total (Winter + Su)</strong></td>
<td><strong>29,214</strong></td>
<td><strong>29,323</strong></td>
<td><strong>29,437</strong></td>
<td><strong>29,551</strong></td>
<td><strong>29,561</strong></td>
<td><strong>29,561</strong></td>
<td><strong>29,561</strong></td>
</tr>
</tbody>
</table>

#### Unfunded

<table>
<thead>
<tr>
<th>Faculty</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unfunded</strong></td>
<td>825</td>
<td>1,130</td>
<td>920</td>
<td>771</td>
<td>1,065</td>
<td>826</td>
<td>718</td>
</tr>
</tbody>
</table>

* Total Funded numbers for 15/16 and beyond could be impacted by the BC Jobs and Skills Plan.
### Table 2: UBCV Intake Targets for Direct Entry Undergraduate Programs

*2015/16 includes Vantage flow to Arts and Science*

**2016/17 includes Vantage flow to Applied Science, Arts, and Science**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Domestic</td>
<td>ISI</td>
<td>Total</td>
<td>Domestic</td>
<td>ISI</td>
</tr>
<tr>
<td>APSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BASC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>546</td>
<td>211</td>
<td>757</td>
<td>553</td>
<td>231</td>
</tr>
<tr>
<td>2</td>
<td>150</td>
<td>39</td>
<td>189</td>
<td>181</td>
<td>55</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>36</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>746</td>
<td>250</td>
<td>996</td>
<td>770</td>
<td>287</td>
</tr>
<tr>
<td>BSN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>117</td>
<td>117</td>
<td>234</td>
<td>116</td>
<td>2</td>
</tr>
<tr>
<td>APSC Total</td>
<td>863</td>
<td>250</td>
<td>1,113</td>
<td>886</td>
<td>289</td>
</tr>
<tr>
<td>ARTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1,590</td>
<td>615</td>
<td>2,205</td>
<td>1,596</td>
<td>601</td>
</tr>
<tr>
<td>2</td>
<td>420</td>
<td>133</td>
<td>553</td>
<td>376</td>
<td>136</td>
</tr>
<tr>
<td>3</td>
<td>400</td>
<td>84</td>
<td>484</td>
<td>397</td>
<td>89</td>
</tr>
<tr>
<td>BFA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>3</td>
<td>18</td>
<td>27</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>39</td>
<td>48</td>
<td>87</td>
<td>54</td>
<td>12</td>
</tr>
<tr>
<td>BIE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>42</td>
<td>43</td>
<td>85</td>
<td>42</td>
<td>36</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>18</td>
<td>24</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BMUS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>41</td>
<td>8</td>
<td>49</td>
<td>39</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>13</td>
<td>26</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>17</td>
<td>34</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>BSW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>30</td>
<td>60</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>BMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td>20</td>
<td>40</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sciences PO</td>
<td>7</td>
<td>13</td>
<td>20</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Arts Total</td>
<td>2,607</td>
<td>895</td>
<td>3,502</td>
<td>2,603</td>
<td>915</td>
</tr>
<tr>
<td>COMM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCOM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>380</td>
<td>314</td>
<td>694</td>
<td>401</td>
<td>333</td>
</tr>
<tr>
<td>2</td>
<td>107</td>
<td>63</td>
<td>170</td>
<td>113</td>
<td>64</td>
</tr>
<tr>
<td>3</td>
<td>85</td>
<td>49</td>
<td>134</td>
<td>91</td>
<td>56</td>
</tr>
<tr>
<td>COMM Total</td>
<td>572</td>
<td>426</td>
<td>998</td>
<td>605</td>
<td>453</td>
</tr>
<tr>
<td>DENT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BDSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>30</td>
<td>30</td>
<td>60</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>6</td>
<td>12</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>DENT Total</td>
<td>46</td>
<td>46</td>
<td>92</td>
<td>46</td>
<td>46</td>
</tr>
</tbody>
</table>
Table 2: UBCV Intake Targets for Direct Entry Undergraduate Programs

* 2015/16 includes Vantage flow to Arts and Science
** 2016/17 includes Vantage flow to Applied Science, Arts, and Science

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Domestic</td>
<td>ISI</td>
<td>Total</td>
<td>Domestic</td>
<td>ISI</td>
</tr>
<tr>
<td>EDUC-KIN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BKIN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>180</td>
<td>14</td>
<td>194</td>
<td>203</td>
<td>29</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>40</td>
<td>80</td>
<td>36</td>
<td>37</td>
</tr>
<tr>
<td>3</td>
<td>83</td>
<td>1</td>
<td>84</td>
<td>103</td>
<td>104</td>
</tr>
<tr>
<td>EDUC-KIN Total</td>
<td>303</td>
<td>15</td>
<td>318</td>
<td>342</td>
<td>31</td>
</tr>
<tr>
<td>FRST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSCN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>75</td>
<td>27</td>
<td>102</td>
<td>64</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>3</td>
<td>10</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSCN Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>35</td>
<td>11</td>
<td>46</td>
<td>32</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSFS Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSAB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>110</td>
<td>18</td>
<td>128</td>
<td>91</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>4</td>
<td>39</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>1</td>
<td>11</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>LFS Total</td>
<td>385</td>
<td>88</td>
<td>473</td>
<td>366</td>
<td>122</td>
</tr>
<tr>
<td>SCIE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>91</td>
<td>8</td>
<td>99</td>
<td>90</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCS Total</td>
<td>1,771</td>
<td>323</td>
<td>2,094</td>
<td>1,823</td>
<td>332</td>
</tr>
<tr>
<td>Grand Total</td>
<td>6,742</td>
<td>2,086</td>
<td>8,828</td>
<td>6,887</td>
<td>2,254</td>
</tr>
</tbody>
</table>

* Pending government approval
### Table 4: ISI Undergraduate FTE

#### Winter Session

<table>
<thead>
<tr>
<th>Faculty</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16*</th>
<th>2016/17**</th>
<th>2017/18**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>465</td>
<td>517</td>
<td>595</td>
<td>710</td>
<td>783</td>
<td>898</td>
<td>1,034</td>
</tr>
<tr>
<td>Arts</td>
<td>1,472</td>
<td>1,638</td>
<td>1,810</td>
<td>2,032</td>
<td>2,383</td>
<td>2,677</td>
<td>2,995</td>
</tr>
<tr>
<td>Commerce</td>
<td>611</td>
<td>737</td>
<td>888</td>
<td>1,061</td>
<td>1,190</td>
<td>1,247</td>
<td>1,262</td>
</tr>
<tr>
<td>Dentistry</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Education</td>
<td>51</td>
<td>53</td>
<td>62</td>
<td>79</td>
<td>77</td>
<td>75</td>
<td>74</td>
</tr>
<tr>
<td>Forestry</td>
<td>106</td>
<td>137</td>
<td>159</td>
<td>188</td>
<td>206</td>
<td>214</td>
<td>231</td>
</tr>
<tr>
<td>Law</td>
<td>5</td>
<td>7</td>
<td>12</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Land and Food Systems</td>
<td>121</td>
<td>131</td>
<td>155</td>
<td>218</td>
<td>267</td>
<td>304</td>
<td>334</td>
</tr>
<tr>
<td>Medicine</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Science</td>
<td>384</td>
<td>439</td>
<td>546</td>
<td>672</td>
<td>868</td>
<td>1,048</td>
<td>1,241</td>
</tr>
<tr>
<td>Vantage College (Year 1 only)</td>
<td>0</td>
<td>0</td>
<td>169</td>
<td>235</td>
<td>335</td>
<td>447</td>
<td></td>
</tr>
<tr>
<td>Non Degree &amp; Residents</td>
<td>37</td>
<td>54</td>
<td>86</td>
<td>235</td>
<td>160</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td><strong>Grand Total (Winter)</strong></td>
<td>3,257</td>
<td>3,718</td>
<td>4,326</td>
<td>5,378</td>
<td>6,183</td>
<td>6,971</td>
<td>7,786</td>
</tr>
</tbody>
</table>

#### Summer FTEs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Total (Winter + Summer)</td>
<td>3,588</td>
<td>4,105</td>
<td>4,767</td>
<td>5,908</td>
<td>6,760</td>
<td>7,600</td>
<td>8,471</td>
</tr>
</tbody>
</table>

#### Change over prior year

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Change over prior year</td>
<td>14%</td>
<td>16%</td>
<td>24%</td>
<td>14%</td>
<td>12%</td>
<td>11%</td>
<td></td>
</tr>
</tbody>
</table>

* 2015/16 includes Vantage flow to Arts and Science
** 2016/17 includes Vantage flow to Applied Science, Arts, and Science
<table>
<thead>
<tr>
<th>Faculty</th>
<th>Direct Entry Program</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16*</th>
<th>2016/17**</th>
<th>2017/18**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>BASC</td>
<td>13%</td>
<td>14%</td>
<td>16%</td>
<td>19%</td>
<td>21%</td>
<td>25%</td>
<td>28%</td>
</tr>
<tr>
<td>Arts</td>
<td>BA</td>
<td>16%</td>
<td>18%</td>
<td>19%</td>
<td>21%</td>
<td>24%</td>
<td>25%</td>
<td>28%</td>
</tr>
<tr>
<td>Arts</td>
<td>BIE</td>
<td>5%</td>
<td>6%</td>
<td>7%</td>
<td>8%</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
</tr>
<tr>
<td>Arts</td>
<td>BMUS</td>
<td>49%</td>
<td>47%</td>
<td>46%</td>
<td>46%</td>
<td>48%</td>
<td>48%</td>
<td>48%</td>
</tr>
<tr>
<td>Arts</td>
<td>BMS</td>
<td>50%</td>
<td>50%</td>
<td>49%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commerce</td>
<td>BCOM</td>
<td>23%</td>
<td>27%</td>
<td>30%</td>
<td>34%</td>
<td>37%</td>
<td>39%</td>
<td>39%</td>
</tr>
<tr>
<td>Education</td>
<td>BHK/BKIN</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BSCN</td>
<td>18%</td>
<td>23%</td>
<td>23%</td>
<td>25%</td>
<td>26%</td>
<td>26%</td>
<td>27%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BSCW</td>
<td>27%</td>
<td>36%</td>
<td>42%</td>
<td>50%</td>
<td>52%</td>
<td>55%</td>
<td>52%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BSF</td>
<td>15%</td>
<td>22%</td>
<td>24%</td>
<td>21%</td>
<td>19%</td>
<td>15%</td>
<td>19%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BSFS</td>
<td>16%</td>
<td>20%</td>
<td>23%</td>
<td>26%</td>
<td>26%</td>
<td>28%</td>
<td>29%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BUF</td>
<td>43%</td>
<td>39%</td>
<td>38%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land and Food Systems</td>
<td>BSAB</td>
<td>12%</td>
<td>12%</td>
<td>15%</td>
<td>15%</td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>Land and Food Systems</td>
<td>BSFN</td>
<td>11%</td>
<td>12%</td>
<td>14%</td>
<td>19%</td>
<td>24%</td>
<td>28%</td>
<td>31%</td>
</tr>
<tr>
<td>Science</td>
<td>BSC</td>
<td>7%</td>
<td>8%</td>
<td>9%</td>
<td>11%</td>
<td>14%</td>
<td>16%</td>
<td>19%</td>
</tr>
<tr>
<td>Vantage College</td>
<td>VANT</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>TOTAL ALL DIRECT ENTRY PROGRAMS</strong></td>
<td></td>
<td>14%</td>
<td>15%</td>
<td>17%</td>
<td>20%</td>
<td>23%</td>
<td>25%</td>
<td>27%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Direct Entry Program</th>
<th>2011/12</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16*</th>
<th>2016/17**</th>
<th>2017/18**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>BASC</td>
<td>13%</td>
<td>14%</td>
<td>16%</td>
<td>19%</td>
<td>21%</td>
<td>25%</td>
<td>28%</td>
</tr>
<tr>
<td>Arts</td>
<td>BA</td>
<td>16%</td>
<td>18%</td>
<td>19%</td>
<td>21%</td>
<td>24%</td>
<td>25%</td>
<td>28%</td>
</tr>
<tr>
<td>Arts</td>
<td>BIE</td>
<td>5%</td>
<td>6%</td>
<td>7%</td>
<td>8%</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
</tr>
<tr>
<td>Arts</td>
<td>BMUS</td>
<td>15%</td>
<td>22%</td>
<td>24%</td>
<td>21%</td>
<td>19%</td>
<td>15%</td>
<td>19%</td>
</tr>
<tr>
<td>Arts</td>
<td>BMS</td>
<td>50%</td>
<td>50%</td>
<td>49%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commerce</td>
<td>BCOM</td>
<td>23%</td>
<td>27%</td>
<td>30%</td>
<td>34%</td>
<td>37%</td>
<td>39%</td>
<td>39%</td>
</tr>
<tr>
<td>Education</td>
<td>BHK/BKIN</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BSCN</td>
<td>16%</td>
<td>22%</td>
<td>24%</td>
<td>21%</td>
<td>19%</td>
<td>15%</td>
<td>19%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BSCW</td>
<td>11%</td>
<td>12%</td>
<td>14%</td>
<td>19%</td>
<td>24%</td>
<td>28%</td>
<td>31%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BSF</td>
<td>8%</td>
<td>9%</td>
<td>11%</td>
<td>14%</td>
<td>16%</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BSFS</td>
<td>16%</td>
<td>20%</td>
<td>23%</td>
<td>26%</td>
<td>26%</td>
<td>28%</td>
<td>29%</td>
</tr>
<tr>
<td>Forestry</td>
<td>BUF</td>
<td>43%</td>
<td>39%</td>
<td>38%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land and Food Systems</td>
<td>BSAB</td>
<td>12%</td>
<td>12%</td>
<td>15%</td>
<td>15%</td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>Land and Food Systems</td>
<td>BSFN</td>
<td>11%</td>
<td>12%</td>
<td>14%</td>
<td>19%</td>
<td>24%</td>
<td>28%</td>
<td>31%</td>
</tr>
<tr>
<td>Science</td>
<td>BSC</td>
<td>7%</td>
<td>8%</td>
<td>9%</td>
<td>11%</td>
<td>14%</td>
<td>16%</td>
<td>19%</td>
</tr>
<tr>
<td>Vantage College</td>
<td>VANT</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>TOTAL ALL DIRECT ENTRY PROGRAMS</strong></td>
<td></td>
<td>14%</td>
<td>15%</td>
<td>17%</td>
<td>20%</td>
<td>23%</td>
<td>25%</td>
<td>27%</td>
</tr>
</tbody>
</table>
## UBC Admission Proposal Form
### Change to Course or Program

<table>
<thead>
<tr>
<th>Faculty: Education</th>
<th>Date: Jan. 22, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Teacher Education Office</td>
<td>Contact Person: Wendy Carr</td>
</tr>
<tr>
<td>Faculty Approval Date:</td>
<td>Phone: 7-5088</td>
</tr>
<tr>
<td>Effective Session – Winter sessionTerm 1</td>
<td>Email: <a href="mailto:wendy.carr@ubc.ca">wendy.carr@ubc.ca</a></td>
</tr>
<tr>
<td>Effective Academic year: 2014</td>
<td></td>
</tr>
</tbody>
</table>

**URL:**
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,202,320,158

---

**Proposed Calendar Entry:**

**Application**

...  

**Admission Selection Process**

**Elementary, Middle Years, and Secondary**

...  

**1. Academic Requirements**

...  

**Admission average**

- The admission average for elementary option is calculated using the most recently completed 60 credits. The admission average for the middle years option is calculated on 33 credits (39 credits for the English specialization) including: 6 credits of English, 3 credits of mathematics, 3 credits of laboratory science, 3 credits of history/geography, and 18-24 credits of senior coursework in a chosen specialization area. The admission average for the secondary option is calculated on the senior courses for each teaching field. A minimum admission average of 65% is required; however, competition for the

**Present Calendar Entry:**

**Application**

...  

**Admission Selection Process**

**Elementary, Middle Years, and Secondary**

...  

**1. Academic Requirements**

...  

**Admission average**

- The admission average for elementary option is calculated using the best 30 credits taken with the most recently completed 60 credits. The admission average for the middle years option is calculated on 33 credits (39 credits for the English specialization) including: 6 credits of English, 3 credits of mathematics, 3 credits of laboratory science, 3 credits of history/geography, and 18-24 credits of senior coursework in a chosen specialization area. The admission average for the secondary option is calculated on the senior courses for each teaching field. A minimum admission average of 65% is
available seats is high and the admission average of successful applicants may be higher than the 65% minimum required for application.

Overall Academic History

......

required; however, competition for the available seats is high and the admission average of successful applicants may be higher than the 65% minimum required for application.

Overall Academic History

......

Type of Action:
1. Change in GPA admission average calculation from best 30 credits taken within the last 60 credits to the most recently taken 60 credits.

Rationale for Proposed Change:
1. Recent credits more accurately represent an applicant’s overall academic potential. We believe that, once a student has chosen a major and is taking senior level course work towards that major, s/he is focused on an area (or areas) of interest, and course performance in that area (or areas) would likely show his/her best academic potential.

The proposed change will create a closer alignment to middle years and secondary options, which rely primarily on senior credits for a teachable area to determine GPA (taken during the third and fourth year).
**UBC Admission Proposal Form**  
**Change to Course or Program**

| Faculty: Education  
Department: Teacher Education Office  
Faculty Approval Date:  
Effective Session: Winter session Term 1  
Effective Academic year: 2014 | Date: May 15, 2014  
Contact Person: Wendy Carr  
Phone: 7-5088  
Email: wendy.carr@ubc.ca |
|---|---|
| Proposed Calendar Entry:  
Admission  
...  
Elementary Teacher Education  
...  
Admission Requirements  
...  
**Part III**  
Applicants to the 12-month elementary option are required to have completed a four-year (120 credit) degree, or equivalent.  
A minimum average of 65% is required on the last 60 credits.  
Applicants to the 12-month French Immersion or Core French program options must pass an oral and written French diagnostic test at an appropriate level prior to admission. Applicants are strongly encouraged to have taken university-level coursework in French grammar and composition. | URL:  
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,202,320,157  
Present Calendar Entry:  
Admission  
...  
Elementary Teacher Education  
...  
Admission Requirements  
...  
**Part III**  
Applicants to the 12-month elementary option are required to have completed a four-year (120 credit) degree, or equivalent.  
A minimum average of 65% is required on the best 30 credits taken within the last 60 credits.  
Applicants to the 12-month French Immersion or Core French program options must pass an oral and written French diagnostic test at an appropriate level prior to admission. Applicants are strongly encouraged to have taken university-level coursework in French grammar and composition. |
<table>
<thead>
<tr>
<th>In addition, applicants to all program options must have volunteer or other experience in working with young people, preferably at the age range they are proposing to teach.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In addition, applicants to all program options must have volunteer or other experience in working with young people, preferably at the age range they are proposing to teach.</td>
</tr>
<tr>
<td><strong>Actions:</strong></td>
</tr>
<tr>
<td>Change how GPA admission average is calculated from best 30 within last 60 credits to last 60 credits.</td>
</tr>
<tr>
<td><strong>Rationale:</strong></td>
</tr>
<tr>
<td>To more accurately represent the overall recent academic potential.</td>
</tr>
</tbody>
</table>
Proposal to change GPA admission calculation for BEd elementary program requirements (May 2014)

**Objective:** To modify how we calculate GPA admission calculation for the BEd elementary program admission requirement.

**Rationale:** Last year we changed how we calculate our admission average to consider the more recently taken academics as opposed to specific courses. The intention was to get a sense of the academic potential of applicants as close to admission as possible. CCASA approved our teacher education program using the best 30 credits within the most recently taken 60 credits.

What has become apparent this year is considering 30 credits within 60 credits may have been too liberal. If the 60 credit threshold falls within a term, we have to consider grades from that whole term. Often this means considering the most recently taken 65-75 credits.

We are losing our ability to differentiate based on GPA, which is a substantial piece of our admission process.

Below are admission averages for the past 3 years.

<table>
<thead>
<tr>
<th></th>
<th>2012 (n=286)</th>
<th>2013 (n=296)</th>
<th>2014 (n=286)</th>
</tr>
</thead>
<tbody>
<tr>
<td>average</td>
<td>77.63</td>
<td>76.80</td>
<td>81.32</td>
</tr>
<tr>
<td>median</td>
<td>77.23</td>
<td>76.60</td>
<td>81.11</td>
</tr>
</tbody>
</table>

Examples calculating GPA multiple ways using admitted teacher candidates:

<table>
<thead>
<tr>
<th></th>
<th>Best 30 within last 60</th>
<th>Best 30 within last 45</th>
<th>Last 30</th>
<th>Last 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student A</td>
<td>77.05</td>
<td>75.35</td>
<td>72.50</td>
<td>72.50</td>
</tr>
<tr>
<td>Student B</td>
<td>76.81</td>
<td>74.39</td>
<td>70.81</td>
<td>69.50</td>
</tr>
<tr>
<td>Student C</td>
<td>83.47</td>
<td>76.70</td>
<td>76.60</td>
<td>74.07</td>
</tr>
</tbody>
</table>

6 Teacher Education programs within BC consider the most recently taken 60 credits.
18 February 2015

To: Vancouver Senate

From: Senate Curriculum Committee

Re: Applied Science Professional Master’s Program Platform (approval)

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

The proposals contained herein are for a set of courses designed to act as a “Platform” of foundation coursework focused on project management, data analysis, and leadership skills. These courses comprise part of the program requirements for the Faculty’s new professional master’s programs that use the Platform/Pillar structure, as described in the following document.

The following is recommended to Senate:

**Motion:** “That the new courses and associated APPP course code brought forward by the Faculty of Applied Science be approved.”

Respectfully submitted,

Mrs. Carol Jaeger, Vice-Chair

Senate Curriculum Committee
FACULTY OF APPLIED SCIENCE

New program, course code, and courses.

Applied Professional Master’s Program Platform; APPP (Applied Science Professional Program Platform) Course Code; APPP 501 (1.5) Project Management and Leadership; APPP 502 (1.5) Sustainability and Leadership; APPP 503 (1.5) Organizational Leadership; APPP 504 (3) Business Acumen for Technical Leaders; APPP 506 (3) Capstone Project
Professional Master’s Program – Platform Package

Introduction

This document contains a curriculum proposal for a set of courses designed to act as a ‘Platform’ of foundation coursework focused on project management, data analysis, and leadership skills. These courses are being created and/or supported by the Faculty of Applied Science Dean’s Office as part of an initiative to create new and innovative Professional Master’s programs. Scheduling, management, and instruction of these courses will be coordinated by the Dean’s office. The creation of the Platform is intended to provide a coherent group of courses that can be delivered efficiently and that help to support the creation of new Master’s programs.

Structure

The Platform is intended to be offered as a package with modest room for modification. As a whole, the Platform courses will total 9 to 12 credits plus one of a co-op work term, an entrepreneurial experience, or a capstone project. Note that the capstone project credit is counted towards the Pillar content (the term Pillar is equivalent to Specialization). The Platform courses will be spread over a 12-month period, consistent with the intended completion time for a new suite of Professional Master’s programs. It is expected that these new programs would typically be 30 credits in total, and thus this Platform package would typically represent 30-40% of any new program. The courses selected for the Platform were determined by consolidating the feedback and research from a set of new program offerings under development. The foundation skills and desired learning outcomes that were common to nearly all programs form the contents of the Platform. This creates an efficient way for units within the Faculty to offer this material without overlap or duplication. Modest flexibility has been incorporated in the Platform courses to enable them to be well suited to all programs under development, with the expectation that they will be compatible with future programs as well. The choice of whether a co-op work term, an entrepreneurial experience, or a capstone project is selected for each Professional Master’s program sharing this platform package is determined by the curriculum development team for each program. The selection takes into account the nature of the relevant industry (or industries) and is chosen to provide the most valuable educational experience for the students.

The primary learning outcomes to be addressed by the Platform courses are:

• Effective delivery of multidisciplinary projects
  – Project Management
  – Leadership & team building
  – Effective communications
  – Sustainability
• Appropriate use of data for technical and business decision-making
• Understanding of the critical components of how business works
• Appreciation of the impact of cross-cutting themes in industry

Consultation and Feedback Sought

The components of the proposed Professional Program Platform were established based on the following feedback channels:
• >300 survey responses from Co-op partners
• >200 survey responses from M.Eng. students and alumni
• >12 interviews with executives of organizations in engineering-intensive industries
• 10 cross-disciplinary members of the APSC New Professional Programs Working Committee
• Review of professional, technical Master’s programs from top Universities in Canada and the United States of America
• Ongoing feedback through Sector Focus Groups

The Platform is designed to provide training in project management, communication skills, data analysis and business skills common to each of the industry Pillars that will be paired with the Platform to create a stand-alone Master’s program. The combination of the Platform with a cross-disciplinary technical Pillar will be unique in Canada and the United States of America.

The standard Platform package is structured as follows:

<table>
<thead>
<tr>
<th>Winter term 2 (January - April)</th>
<th>Summer term (May - August)</th>
<th>Winter term 1 (September - December)</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPP 501 (1.5 credits)</td>
<td>ONE OF:\APPSC 412 – Co-op work placement (6 non-additive credits) [see course information below]</td>
<td>Faculty of Commerce and Business Administration Elective (1.5 credits) (free elective)</td>
</tr>
<tr>
<td>APPP 502 (1.5 credits) (Taught in succession)</td>
<td>APPP 503 (1.5 cr.)</td>
<td>OR \e@UBC lean Launchpad activity (no credits) \OR \APPP 506 (3 credits) Pillar specific for programs with capstone projects.</td>
</tr>
<tr>
<td>APPP 505 (3 credits) (optional – may be substituted by a pillar specific analytics course)</td>
<td>APPP 504 (3 credits)</td>
<td></td>
</tr>
</tbody>
</table>

† The choice of whether a co-op work term, an entrepreneurial experience, or a capstone project is selected for each Professional Master’s program sharing this platform package is determined by the curriculum development team for each program. The selection takes into account the nature of the relevant industry (or industries) and is chosen to provide the most valuable educational experience for the students.

Where the courses are defined as:
APPP 501 - Project Management and Leadership
APPP 502 – Sustainability and Leadership
APPP 503 - Organizational Leadership
APPP 504 – Business Acumen for Technical Leaders
APPP 505 - Analytics and Interpretation for Applied Sciences
APPP 506 – Capstone Project The table above is shown as a sample to how APPP 506 can be utilized by a technical pillar if chosen. The project could extend beyond one term if that was of benefit to the students (e.g. providing additional time for students to formulate project ideas).

APSC 412 – Co-operative Education Term 6 non-additive credits under the existing course code used for graduate co-op placements. Non-additive credits are distinct from academic credits typically used to define course-based degree requirements. Though not relevant here because a program fee model is being used, non-additive credits are used widely at UBC as they also allow a different fee structure for co-op placements as opposed to course-based credits. All UBC co-op programs (across faculties) provide non-additive credits to their students who have successfully completed a minimum 12 week co-op work term. Master’s students receive a Pass or Fail based on a satisfactory employer evaluation and satisfactory grade on their work term report. If a Master’s student successfully completes a co-op term this would be listed on their transcript under APSC 412 with a ‘pass’. The Faculty of Applied Science Co-op program follows the accreditation requirements of the Canadian Association for Co-operative Education in structuring co-op term parameters. Non-additive credit is not included in the total credits required for the degree. The Co-op Office registers all placed students. Students cannot register themselves into co-op terms.

Detailed course syllabi and curriculum forms are included in the appendix to this document.

**Options**

The following options will be possible while still maintaining the integrity and intent of the Platform design:

1) A program may choose to replace APPP 505 with their own variation as appropriate. Should a program choose to replace this course with their own offering, the Platform would then consist of 9 credits or 30% of a typical 30-credit program.

2) In the summer term, APPP 503 and APPP 504 will be offered in an intense 4-week version (boot-camp) by the Faculty of Commerce and Business Administration, and will be offered twice during the summer: once in May and once in August.

3) A 12-week block of time in the summer term can be filled by one of three options, below. It is expected that most programs will mandate a particular option based on providing the most industry-relevant option for students, though some may leave the choice to the student. The three options are:

   a. A 12-week co-op work term can be completed with the student’s employer or with a different organization. Regardless of the co-op placement, a satisfactory employer evaluation at the completion of the term, in addition to a pass on a work term report, is required for satisfactory completion of the co-op work term. This option would be delivered under the existing co-operative education course code APSC 412.

   b. A 12-week entrepreneurial opportunity such as the e@UBC Lean Launchpad program which helps participants build the business model for launch of a new
product or service. Note that this option may be delivered under the co-operative education course code APSC 412. A project report, which may take the form of a business plan, will be required for satisfactory completion of an entrepreneurial opportunity.

c. Capstone activity, i.e. APPP 506 or a Pillar-specific capstone course. APPP 506 can be utilized by a technical Pillar if chosen. The project could stretch over one or two terms. Note that the credits associated with APSC 506 are considered to be part of the Pillar, not the Platform. Capstone credit value is a component of the full credit requirements of the program. A capstone project is related to the technical Pillar on which the particular Master’s program is focused. A formal project report would be required for satisfactory completion of the capstone project course. Programs can also choose to schedule capstone activity during the fall (third) term of the one-year program.

4) Faculty of Commerce and Business Administration Elective – in the final term, space is provided in the curriculum for an elective course offered through the Faculty of Commerce and Business Administration. Note that several courses with a 1.5 credit value are available, as courses with this credit weighting are typical in their programs. This elective is intended to provide flexibility for students who wish to obtain greater exposure to an area of their choosing. The Applied Science Dean’s office will work with the Faculty of Commerce and Business Administration to ensure that a variety of courses are available to students in qualified APSC Professional Programs.

Restrictions

The courses in the Platform will only be available as a package (with the option of any or all of the aforementioned modifications), and only when offered as a key component of a new Professional Master’s program.

Pricing

The Platform package, if included as a program requirement for a new Professional Master’s program, will be included in the pricing for that program. Program fees (either full program or per-term pricing) are now determined in consultation with the Provost’s office and must be based on, at a minimum, full cost recovery for the program.

Scheduling

For the initial offerings the Platform will only be offered in an intense 1-year format.
## UBC Curriculum Proposal Form
### Change to Course or Program

<table>
<thead>
<tr>
<th>Faculty: Applied Science</th>
<th>Date: November 14, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Dean’s Office</td>
<td>Contact Person: Deb Feduik</td>
</tr>
<tr>
<td>Faculty Approval Date: December 5, 2014</td>
<td>Phone: 2-8386</td>
</tr>
<tr>
<td>Effective Session (W or S): 2015W</td>
<td>Email: <a href="mailto:dfeduik@mail.ubc.ca">dfeduik@mail.ubc.ca</a></td>
</tr>
<tr>
<td>Effective Academic Year: 2015-2016</td>
<td></td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

APPP – Applied Science Professional Program Platform

**Present Calendar Entry:** N/A

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

**Rationale for Proposed Change:**

This new course code is part of the APSC Professional Program Platform delivered in common with a Pillar in the Master of Engineering Leadership (M.E.L.) or Master of Health Leadership and Policy (M.H.L.P.). The premise of these programs is to combine technical specialization with applied leadership and management training relevant to the target industries. Project management practices (e.g.,

<table>
<thead>
<tr>
<th>Faculty: Applied Science</th>
<th>Date: October 28, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Dean’s Office</td>
<td>Contact Person: Tamara Etmannski</td>
</tr>
<tr>
<td>Faculty Approval Date: December 5, 2014</td>
<td>Phone: 7-3045</td>
</tr>
<tr>
<td>Effective Session (W or S): 2015W</td>
<td>Email: <a href="mailto:tamara.etmannski@ubc.ca">tamara.etmannski@ubc.ca</a></td>
</tr>
<tr>
<td>Effective Academic Year: 2015-2016</td>
<td></td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

APPP 501 (1.5) Project Management and Leadership

Leading complex multidisciplinary projects through management processes; project management frameworks, standards; core management processes of planning, scheduling, estimating, survey of communication, risk, and management issues; case studies in industry-relevant project management. Collaboratively with the Faculty of Commerce and Business Administration.

*This course is not eligible for Credit/D/Fail*

**Present Calendar Entry:** N/A

**Type of Action:** Create new course

**Rationale for Proposed Change:**

This new course code is being created to identify the new courses within the common Platform of the Applied Science Professional Program. The Platform is being delivered as a partnership between the Faculties of Commerce and Business Administration and Applied Science. APPP is a neutral name that was agreed upon by both parties to best represent the courses offered.
grading.

planning, scheduling, cost estimating, risk management, quality management, etc.) is the central form of management practiced in many of these industries, and is a valuable and relevant subject in the others. As such, this course addresses a foundational subject for the M.E.L. and M.H.L.P. programs.

This course is derived from the existing courses, CIVL523, Project Management for Engineers, adapted for a more multi-disciplinary audience and split into multiple, shorter courses for a more flexible delivery. The course will be delivered with some elements that are common to project management in all disciplines (e.g., lectures on project management principles and theory), and some elements that are applied to the individual industries that make up the M.E.L. and M.H.L.P. programs (e.g., industry-specific case studies). (APPP 501/502/503).

Faculty: Applied Science
Department: Dean’s Office
Faculty Approval Date: Dec. 5, 2014
Effective Session (W or S): 2015 W
Effective Academic Year: 2015-2016
Date: October 28, 2014
Contact Person: Tamara Etmannski
Phone: 7-3045
Email: tamara.etmannski@ubc.ca

Proposed Calendar Entry:

APPP 502 (1.5) Sustainability and Leadership

Skills for leading change that influences triple-bottom-line; sustainability, change agency systems thinking; awareness and perspective for engagement and communication; adaptive leadership; change dynamics; cases studies in organizational and social change. Collaboratively delivered with the Faculty of Commerce and Business Administration. This course is not eligible for Credit/D/Fail grading.

APPP 501/502/503.

Present Calendar Entry: N/A

Type of Action: Create new course

Rationale for Proposed Change:

This course is part of the APSC Professional Program Platform delivered in common with a Pillar in the Master of Engineering Leadership (M.E.L.) or Master of Health Leadership and Policy (M.H.L.P.).

This course is based on the existing courses, CIVL523, Project Management for Engineers and CHBE573 Sustainability Leadership, adapted for a more multi-disciplinary audience and split into multiple, shorter courses for a more flexible delivery (APPP 501/502/503).
The Canadian Engineering Accreditation Board has identified 12 graduate required attributes to the professional training of engineers. These attributes include the impact of engineering on society and the environment, individual and teamwork skills, ethics and equity and communication skills which are essential skills to cultivate in leading others in their discipline. Feedback from employers indicate that post-graduation, engineers need to continue to advance these skills to progress in their career.

<table>
<thead>
<tr>
<th>Faculty: Applied Science</th>
<th>Date: October 28, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Dean’s Office</td>
<td>Contact Person: Tamara Etmannski</td>
</tr>
<tr>
<td>Faculty Approval Date: Dec. 5, 2014</td>
<td>Phone: 7-3045</td>
</tr>
<tr>
<td>Effective Session (W or S): 2015W</td>
<td>Email: <a href="mailto:tamara.etmannski@ubc.ca">tamara.etmannski@ubc.ca</a></td>
</tr>
<tr>
<td>Effective Academic Year: 2015-2016</td>
<td></td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

**APPP 503 (1.5) Organizational Leadership**

Behaviour of people and groups and its application to management and leadership within professional organizations; motivation, group dynamics, and organizational structure; leadership styles and effectiveness; assessing organizational effectiveness. Collaboratively delivered with the Faculty of Commerce and Business Administration.

*This course is not eligible for Credit/D/Fail grading.*

**Present Calendar Entry:** N/A

**Type of Action:** Create new course

**Rationale for Proposed Change:**

This course is part of the APSC Professional Program Platform delivered in common with a Pillar in the Master of Engineering Leadership (M.E.L.), or Master of Health Leadership and Policy (M.H.L.P.).

This course is based on the existing courses, CIVL523, Project Management for Engineers and CHBE573 Sustainability Leadership, adapted for a more multi-disciplinary audience and split into multiple, shorter courses for a more flexible delivery (APPP 501/502/503).

It was strongly suggested during many of the Industry Feedback sessions that the students learn about organizational structure as they are training to be the next level of management and thus need to be exposed to standardized and industry-accepted leadership tools and models.
<table>
<thead>
<tr>
<th>Faculty: Applied Science</th>
<th>Date: Nov. 17, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Dean’s Office</td>
<td>Contact Person: Tamara Etmannski</td>
</tr>
<tr>
<td>Faculty Approval Date: December 5, 2014</td>
<td>Phone: 7-3045</td>
</tr>
<tr>
<td>Effective Session: 2015W</td>
<td>Email: <a href="mailto:tamara.etmannski@ubc.ca">tamara.etmannski@ubc.ca</a></td>
</tr>
<tr>
<td>Year for Change: 2015-2016</td>
<td></td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

APPP 504 (3) *Business Acumen for Technical Leaders*

Opportunity to tackle real-world problems in high-performing teams and present targeted solutions for assessment. Managerial accounting; Strategy and performance; Market evaluation; Operations management; Negotiations and contract management; Business-case building; Valuation. Collaboratively delivered with the Faculty of Commerce and Business Administration. *This course is not eligible for Credit/D/Fail grading.*

**Present Calendar Entry:** None

**Type of Action:** Create new course

**Rationale:**

This course is part of the APSC Professional Program Platform delivered in common with a Pillar in the Master of Engineering Leadership (M.E.L.), or Master of Health Leadership and Policy (M.H.L.P.). Business acumen is an asset to the aspiring technical leader. It is the knowledge of how business works and the application of that knowledge for the purpose of business improvement. It offers an elevated perspective of how technical skills contribute to building value in a business. This course immerses aspiring technical leaders in the practical application of core business skills through preparation and familiarization in the six core business competencies as modules: Managerial Accounting; Strategy and Performance; Market Evaluation; Operations Management; Negotiations and Contract Management; Business Case Building and Valuation.

---

**Faculty:** Applied Science  
**Department:** Dean’s Office  
**Faculty Approval Date:** Dec. 5, 2014  
**Effective Session (W or S):** 2015W  
**Effective Academic Year:** 2015-2016

**Proposed Calendar Entry:**

APPP 505 (3) *Analytics and Interpretation for Applied Sciences*

Relevant measurable metrics of a project; Data interpretation techniques; Introduction to data visualization; Overview of big data and predictive analytics; Strategies related to metrics and data, ethical and privacy concerns. Collaboratively delivered with

**Present Calendar Entry:** N/A

**Type of Action:** Create new course

**Rationale for Proposed Change:**

This course is part of the APSC Professional Program Platform delivered in common with a Pillar in the Master of Engineering Leadership (M.E.L.) or Master of Health Leadership and Policy (M.H.L.P.).
the Faculty of Commerce and Business Administration.  
*This course is not eligible for Credit/D/Fail grading.*

| Faculty: Applied Science  
Department: Dean’s Office  
Faculty Approval Date: Dec. 5, 2014  
Effective Session (W or S): W  
Effective Academic Year: 2015-2016 | Professionals who can manage analytics and ‘big data’ are highly sought after by companies across the world. In light of this fact, this course is currently being offered in the new professional program platform. Students will learn how to identify key analytics, they will learn about the latest data collection, measurement and presentation tools, how to interpret data and identify trends, and about the role of big data and predictive analytics across several different industries.  

| Date: October 28, 2014  
Contact Person: Tamara Etmannski  
Phone: 7-3045  
Email: tamara.etmannski@ubc.ca | Proposed Calendar Entry:  
**APPP 506 (3) Capstone Project**  
A capstone design project designed to give students experience in leading complex multidisciplinary projects relevant to their professional specialization. Collaboratively delivered with the Faculty of Commerce and Business Administration.  
*This course is not eligible for Credit/D/Fail grading.*  

| Present Calendar Entry: N/A  
Type of Action: Create new course  
Rationale for Proposed Change: This course is part of the APSC Professional Program Platform delivered in common with a Pillar in the Master of Engineering Leadership (M.E.L.) or Master of Health Leadership and Policy (M.H.L.P.).  
As part of the new Applied Science Professional Master’s Program, some proposed programs have specified a capstone project as a key element in a comprehensive program. Creating a new project code using the newly proposed APPP course code identifies this project as part of the Professional Master’s suite of programs and facilitates interdisciplinary project groups where appropriate.  

|  |  |  |  |
18 February 2015

To: Vancouver Senate

From: Senate Curriculum & Admissions Committees

Re: Master of Engineering Leadership in Advanced Materials Manufacturing (approval)

The Senate Curriculum and Admissions Committees have reviewed the material forwarded to them by the Faculty of Applied Science and enclose those proposals they deem ready for approval.

The following is recommended to Senate:

**Motion:** “That the new Master of Engineering Leadership in Advanced Materials Manufacturing (M.E.L.A.M.M.) program and its associated new courses be approved.”

Respectfully submitted,

Mrs. Carol Jaeger, Vice-Chair, Senate Curriculum Committee
Dr. Robert Sparks, Chair, Senate Admissions Committee
FACULTY OF APPLIED SCIENCE

New program and courses

Master of Engineering Leadership in Advanced Materials Manufacturing: MTRL 512 (3)
Material Optimization for the Manufacture of Structural Metallic Components; MTRL 515 (3)
Advanced Simulation and Modelling Tools for Materials Manufacturing; MTRL 517 (3)
Case Studies in advanced Materials Manufacturing
Memo

To:      Paul Harrison, Chair, Senate Academic Policy Committee  
From:    David Farrar, Provost and Vice-President Academic  
Date:    January 15, 2015  

Re: Administration of Master of Engineering Leadership Programs

The Dean of the Faculty of Applied Science has requested that the proposed new graduate professional programs be officially designated as professional programs and that they be administered by the Faculty of Applied Science rather than by the Faculty of Graduate and Postdoctoral Studies.

The proposed programs are:

- Master of Engineering Leadership in Advanced Materials Manufacturing
- Master of Engineering Leadership in Clean Energy Engineering
- Master of Engineering Leadership in Dependable Software Systems
- Master of Engineering Leadership in Green Bio-Products
- Master of Engineering Leadership in Integrated Water Management
- Master of Engineering Leadership in Naval Architecture and Marine Engineering
- Master of Engineering Leadership in Urban Systems
- Master of Health Leadership in Seniors Care

1. I am satisfied that these programs meet the criteria for designation as professional graduate programs.

2. For the reasons outlined below, I support these programs being administered by the Faculty of Applied Science
   a) All criteria laid out "Optional Transfer of Professional Graduate Programs from the Faculty of Graduate and Postdoctoral Studies to the Disciplinary Faculties" document, approved by Senate in January of 2005, have been met.
   b) The Faculty of Applied Science has been successfully handling the administration of the Master of Engineering programs for nearly a decade. In that time, the Faculty of Applied Science gained considerable experience in effective graduate program administration. There is a healthy and productive relationship between the Faculty of Graduate and Postdoctoral Studies and Applied Science which all expect to continue.
   c) The Faculty of Applied Science has the resources, including staff and financial resources, to provide the suite of services the Faculty of Graduate and Postdoctoral Studies provides for most graduate programs including financial support for students, student appeals, and matters relating to admissions and compliance with requirements for degree completion.
d) This does not set a precedent. Decisions about the administration of future new
graduate professional programs will be made in accordance with the guidelines
approved by Senate in January, 2005.

e) I have consulted with Vice-Provost and Dean, Graduate and Postdoctoral
Studies, Dr. Susan Porter. She agrees to this request because the M.Eng.
Programs are already administered by the Faculty of Applied Science, and the
Masters of Engineering Leadership are closely related to the M.Eng. programs.
Overview
The University of British Columbia is a comprehensive research-intensive university, consistently ranked among the 40 best universities in the world. It creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world. Since 1915, UBC's West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning. The program strives to provide students with a comprehensive and innovative education that enables them to build on their past work experience and technical skills, adding leadership and interdisciplinary opportunities for learning and interaction with other students. Consultation with stakeholders has revealed that experienced engineers and early-career professionals in the chosen focus areas require sector-relevant, cross-disciplinary technical skills. They also require project management, communication and business skills to be effective leaders.

In the last decade it has become increasingly clear that advanced economies must reinvent their advanced manufacturing capabilities to remain globally competitive and healthy. From Japan to Europe to the United States, there are major initiatives to resurrect and reinvigorate manufacturing bases. For example more than $1 billion USD has been spent to create 10 manufacturing centers in the USA. Historically, as Western manufacturing capabilities hollowed out, universities followed suit and focused their attentions elsewhere. UBC did not follow this trend, and starting in the 1970s established an international presence in knowledge-based materials manufacturing, with luminaries such as Brimacombe and Samarasekera at the lead. The culture and approach they espoused has survived and flourished in the intermediate thirty-plus years, and today UBC is an international leader in advanced materials manufacturing. In particular, a unique set of expertise exists in metals/alloys, composites and the associated manufacturing operations (casting, deformation processing, metal forming, composites (autoclave and out of autoclave processing)). As such, the Materials Engineering Department at UBC is uniquely situated to create a new master’s program for engineers working in key high tech manufacturing industries such as aerospace, automotive and others where the latest design solution emphasize multi-material solutions.

Credential
The credential awarded will be the Master of Engineering Leadership in Advanced Materials Manufacturing (M.E.L. A.M.M.). The degree will be a master’s degree with a balance between advanced engineering theories, interdisciplinary knowledge and real-world applications. The field of study will be advanced engineering technology and techniques for materials manufacturing applications.
Location
The Vancouver Campus of UBC is the main location for classroom education and administration. Course instruction and assignments will be achieved through collaborations among UBC, provincial and federal agencies and local private sector stakeholders involved in materials manufacturing research and development.

Faculty Offering Program
The program will be offered formally, administered and delivered by the Faculty of Applied Science, UBC.

Program Start Date
The program will be offered in the 2015/2016 academic year, beginning in January 2016.

Program Completion Time
Anticipated time for completion of the program is 1 year of full-time academic study, including any work-term placements and non-academic activities.

Objectives of the Proposed Program
The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses. Some large corporations and government activities within the field find themselves deploying skilled business personnel to lead engineering teams. Often this results in a ‘communications gap’ between managers and technical staff thus impairing team effectiveness. The M.E.L A.M.M. program will create Program Managers who are peers to their engineering team members, but whereas those team members may bring specialist skills in an engineering discipline, the graduate of this program will have specialist skills in program management. The program will:
- Equip tomorrow’s professionals with the critical thinking and practical skills necessary to make important contributions to their chosen sector and to make Canada a leader in the global market.
- Capitalize on Vancouver’s industrially diverse environment and UBC’s current stakeholder connections by offering an attractive hands-on education that allows students to get valuable work experience; and allows BC’s companies to benefit from the minds of UBC’s top graduate-level students.
- Link the concerns of extra-university partners by offering students a project-based curriculum that explores cutting edge concepts in collaboration with sector professionals in the Vancouver region.
- Emerge as the leading institution for the continuing education of current leaders in the advanced material manufacturing sector and for the training of tomorrow’s leaders.
- Graduate highly skilled professionals who can fill the jobs gap currently existing and expected to increase in Canada in the foreseeable future.
- Continue to develop a high profile faculty with international expertise in the theory and practice of advanced materials manufacturing.

Program Learning Outcomes
The learning outcomes of the M.E.L. A.M.M. program are to:
• Compare materials and processes by which complex multi-material engineering components are produced
• Analyze structure-property-process paradigm to materials manufacturing systems
• Assess different materials/processes to make complex components
• Evaluate risks associated different material solutions
• Design prototype components
• Integrate solutions into existing production schemes
• Plan a development cycle relevant to industry
• Collect data on production components
• Evaluate production challenges
• Assess opportunities to improve production
• Deliver multidisciplinary projects effectively (project management, leadership and team building, effective communications, sustainability)
• Use data appropriately for technical and business decision-making
• Understand the critical components of how business works
• Appreciate the impact of cross-cutting themes in industry

Contribution to UBC’s Mandate and Strategic Plan
In Place and Promise: The UBC Plan, our vision statement is: “As one of the world’s leading universities, The University of British Columbia creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world.” The program will act as one route to the fulfillment of this promise. With the involvement of faculty from all areas in APSC and the partnership of the Faculty of Commerce and Business Administration; the development of new facilities and the improvement of existing study spaces; and collaboration with local stakeholders in the areas of student mentorship, sponsored project topics, and co-op job placements, the program will offer an exceptional learning environment for students and faculty. In addition, the program will attract students from around the world to study in Vancouver’s diverse environment and graduate students, who will, in turn, be in demand across the globe.

Delivery Methods
The Faculty of Applied Science (APSC) has taken the lead in developing a conceptual framework for new Professional Programs comprising a common “Platform” that provides the professional skills required for an experienced graduate to be an effective professional leader, with “Pillars” of specialization courses in particular sectors relevant to APSC’s educational mission and professional communities. (The term Platform refers to foundation coursework focused on project management, data analysis, and leadership skills, while the term Pillar is equivalent to specialization.) The program will be delivered as an intensive one-year program. It is anticipated that this program will be favourable to post-professional students already in the workplace. The Platform will be delivered by faculty from APSC and the Faculty of Commerce and Business Administration. The Pillar courses will be delivered by faculty from the Department of Materials Engineering. The M.E.L. A.M.M. program requires a minimum of 30 credits of coursework. The distribution will be 12 credits dedicated to the Platform providing the professional skills required for an experienced graduate to be an effective technical manager and 18 credits dedicated to the Pillar in advanced technical courses. Both the Platform and the Pillar
have prescribed core courses. For this program there will be 6 credits of constrained electives.

**Linking Learning Outcomes and Curriculum Design, Optional Work-terms**
The number and variety of courses available to students is purposely limited to ensure a robust and streamlined learning experience that is centered on the program learning outcomes. Each of these outcomes corresponds to at least one of the core courses and summarizes the goal of that course. Work experience is an essential admission requirement and also a key feature of the optional co-op component.

**Program Strengths**
The program offers a comprehensive curriculum that is grounded in collaborative projects embedded in the Platform coursework, and that draws upon the combined expertise of faculty in the participating units. The creation of this program has been driven, in part, by strong interest from the Canadian manufacturing community (includes aerospace, automotive and energy transmission whereby British Columbia will see a high level of activity over the next few decades). A need has been identified to educate engineers with a unique combination of leadership and strong technical, multi-disciplinary knowledge on multi-material solutions to advanced materials manufacturing. Currently, knowledge is rather siloed with specialists trained in steels or in light alloys or in composites. The objective of this program is to educate unique cross-functional engineers in areas identified in collaboration with industry thereby creating exciting careers and benefitting the Canadian economy.

**Related Programs at UBC or other BC Post-secondary Institutions**
A selection of courses offered through existing graduate programs will be used for the new program as well as the creation of new courses. There are currently no existing programs at UBC or within British Columbia that offer this program’s combination of technical skills and advanced leadership training.

**Institutional Contact**
University of British Columbia
Faculty of Applied Science
Elizabeth Croft, Associate Dean, Education & Professional Development
604-822-6614 elizabeth.croft@ubc.ca

**Appendix to the Executive Summary (for internal UBC purposes only)**

Briefly describe the resources that will be required for the program:

**Budget and Funding**
The program will be delivered as fiscally sustainable. The budget is sensitive to enrolment numbers and has been calculated for an initial enrolment of 20, expected to increase to an enrolment of 41 by 2020. Tuition is $27,000 per year for domestic students and $46,000 per year for international students.
**Space Requirements**
Dedicated space for APSC Professional Programs is being developed within a new building to be completed in 2016. UBC has swing space available which will be used as interim accommodation until new facilities are ready.

**Library**
The new courses for this program have been reviewed by the library. The Pillar courses will not require any additional Library support, and the Platform courses requiring new resources will be funded by the APSC Dean’s Office. (See Appendix 2 & 3 and Appendix 7 Platform Proposal)
1. Introduction

This proposal represents one of a suite of new professional programs to be offered at the master’s level in the Faculty of Applied Science (APSC). The programs were developed in parallel and will be delivered in parallel. That is, there will be a common start date and timeline for cohorts in all of the programs. A key feature of this suite of programs is that they are structured in two parts, which will be referred to as the “Platform” and the discipline-specific “Pillar”. The Platform is foundational coursework focused on project management, data analysis, and leadership skills. It is a largely common element accessible to the suite of new APSC professional programs. The Pillar is equivalent to a specialization. It contains technical material specific to Advanced Materials Manufacturing. Complex, structural products such as aircraft, automobiles or jet engines involve remarkably complicated manufacturing process chains to produce safe, efficient and cost-effective products. Modern manufacturing processes are multi-step and end-products are multi-material, i.e. steel, aluminum, titanium and advanced composites must all be integrated into the manufacturing processes. This program will provide a unique combination of knowledge that will make this attractive to practicing engineers. Successful completion of the Platform and a Pillar will result in the granting of one degree. Details of the contents of both the Platform and the Master of Engineering Leadership in Advanced Materials Manufacturing Pillar are documented in this proposal.

2. Program Rationale

2.1. Defining the Need for the Program

Over the past year, members of the University’s Flexible Learning Initiative and the APSC Dean’s office have formed and worked closely with a Program Advisory Committee consisting of faculty from all areas of APSC. The following program proposal is the result of collaborative planning on the part of this committee.

2.2. Professional Program Mission Statement and Context

The University of British Columbia, Faculty of Applied Science, wishes to attract students into a high quality, sector-focused, distinctive & integrated Applied Science Professional Program that has resources to be delivered sustainably and fiscally meets the University’s goals.

1. **UBC continues to encourage innovative** learning approaches within the fiscal model of cost recovery.

2. **The Flexible Learning Strategy** introduced in 2014 lists the development of new Professional Programs as a priority.

UBC has the opportunity to deliver a distinctive APSC Program in line with the University’s Professional Program objectives.
2.3. Applied Science Professional Program Approach

2.3.1. Guiding Principles of the Program Advisory Committee

1. There is ongoing meaningful engagement with stakeholders in market research, development, delivery and career opportunities.
2. Our target market is candidates who might consider either an M.B.A. or M.Eng. Management, but would prefer to develop both sector-relevant technical skills and management and leadership skills – our program will be distinctive in the market.
3. We take advantage of a standardization of core courses to improve quality of offering while reducing costs and complexity.
4. The program is positioned as a premium alternative to a conventional professional master’s program by offering distinctive, high quality, cross-disciplinary technical and non-technical skills to the experienced professional who wants to become a Sector Specialist.
5. Pillars are developed around areas of unique research and teaching strength in APSC, where multiple program “Faculty Champions” are identified, that have strong relevance to our professional community and societal benefit, have strong learner demand, and have strong industry demand for people trained in this sector.
6. Graduate courses offered in the A.M.M. Pillar will be open to all APSC graduate students with the appropriate prerequisites, and similarly to students in other graduate programs, space permitting. This will allow Applied Science to revitalize our graduate program offerings around areas of research and teaching strength, build strong interdisciplinary sector training capacity, and improve our connections to our professional community.

2.3.2. Extensive Market Research was used to develop the Value Propositions

In order to establish the viability of offering new programs, the following activities were undertaken to validate the structure and proposed A.M.M. Pillar. Market research information is provided in Appendix 6.

The objectives and curriculum were developed in conjunction with meaningful stakeholder consultation in 3 phases.

1. Market research & concept development conducted through:
   a. Multiple meetings of the Inter-Disciplinary Working Committee of Applied Science that included the following core members:
      i. Elizabeth Croft (Associate Dean)
      ii. James Olson (Associate Dean)
      iii. Hugh Brock (Vice Provost)
      iv. Reza Vaziri (Head of Civil Engineering)
      v. Peter Englezos (Head of Chemical & Biological Engineering)
      vi. Sathish Gopalakrishnan (Professor in Electrical Engineering)
vii. Scott Dunbar (Head of Mining)

viii. Walter Merida (Director of Clean Energy Research Centre)

ix. Jon Mikkelson (Director of Naval Architecture & Marine Engineering)

x. Panos Nasiopoulos (Director of ICICS)

b. Survey of current M.Eng students and alumni (Appendix 6)

c. Survey of APSC employers (via Co-op Database) (Appendix 6)

d. Desktop research of comparable programs in Canada and the United States of America

2. Validation by external sector expert

Individual consultation with experts:

- Dr. Justin Gammage, GM Canada
- Mr. Tim Skszek, Magna International
- Dr. Mei Li, Ford Motor Company
- Dr. Nick Parson, Rio Tinto Alcan
- Mr. Brent Volk (M.B.A.), Rio Tinto Alcan
- Mr. Nelson Wang, Dicastal

3. Refinement through sector focus groups

The Materials Engineering Department consulted extensively with leaders from major manufacturing companies including two OEM auto manufacturers, two tier suppliers and two major material suppliers to the transportation manufacturing sector. There was strong support for the proposed Professional Master’s program. In particular, the combination of graduate-level technical knowledge along the industry value chain, combined with business skills was noted to be a great strength of the program. It was commented that Bachelor’s degree engineers showed a general lack of business knowledge and this program would help to fill this gap. Finally, it was commented that obtaining this degree would provide engineers in the companies a considerable advantage and that they would be expected to progress more quickly to senior leadership positions.

2.3.3. Market Insights

A detailed assessment of the potential market for the A.M.M. program has been conducted. Industry Canada compiles data using the North American Industry Classification System (NAICS) and 13 of the most relevant industry manufacturing sectors have been identified from the most recent comprehensive set of data (2011), i.e. fabricated metal products, machinery manufacturing, the plastics and rubber industries, primary metals, petroleum and coal product manufacturing, and a range of transportation industries including aerospace, automotive, and boat building. Other industries are also likely to present opportunities for graduates of the program, so this selection can be considered to represent a conservative target of all possible placement opportunities. Together these selected sectors supported
657,000 workers, and generated revenues of $326 billion in 2011 amounting to 20% of Canada’s GDP. More than 19,000 significant enterprises are involved. If one includes small companies (SMEs), non-employers (self-employed), and those having unidentified status (according to Industry Canada data) the number of enterprises may double. However, these small enterprises are not considered to be the most natural receptors for graduates of new advanced materials manufacturing master’s program. By multiplying the Job Growth Rate values (between 2010 and 2011) with the Workers Engaged values (in 2011), one can estimate the incremental jobs appearing in 2011 at around 45,952 across all these sectors. How many of these might be targetable by the new UBC program? Statistics Canada tracks the distribution of the employed population 15 years of age and over by four skill levels, the highest of which (NOC skill level A) includes management positions (senior and middle) and professionals usually requiring a university education. In 2011, NOC skill level A applied to 29.9% of Canada’s employed workforce, or 4.96 million workers. This total includes all degrees from bachelors to doctorates. Making the assumption that manufacturing industries generally maintain their employment ratios (management, technical, administration, sales, casual, and so on) one can infer that between 1% and 5% of the incremental jobs appearing in our chosen industrial sectors might reasonably come from our program, i.e. between 459 and 2297 jobs in 2011. We believe this supports the proposed size of 20-30 students for the program at UBC.

Consistently repeated messages, related to the potential student market and the relevance of the particular focus areas, were heard through all market research activities outlined above.

For example:
1. Experienced engineers in their chosen careers require sector-relevant, cross-disciplinary technical skills.
2. Engineers require project management, communication and business skills to be effective leaders.
3. Few, if any, schools in Canada and the United States of America offer this combination of skills in a technical master’s program.
4. There is a demonstrated need for a program. (Figure 1)
5. Students are willing to apply to graduate-level programs that are relevant to the stakeholders in their chosen sector. (Figure 2)
2.4. Program Overview

2.4.1. Mission

The program strives to provide students with a comprehensive and innovative education that will enable them to advance their career in a path that is different from the traditional APSC course-based master’s or the Master of Business Administration (M.B.A.). The program is structured to provide a combination of advanced technical skills, integrated with professional skills, which will
enable graduates to practice these skills and advance their career trajectory in their chosen industries.

Figure 3 Placement of New Program Sector Specialist with Existing Programs

**The UBC APSC Professional Programs (PP) portfolio targets experienced graduates who wish to become Sector Specialists**

![Diagram showing placement of new program sector specialist with existing programs](image)

**2.4.2. Objectives of the Proposed Program**

The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses. Some large corporations and government activities within the field find themselves deploying skilled business personnel to lead engineering teams. Often this results in a ‘communications gap’ between managers and technical staff thus impairing team effectiveness. The M.E.L. A.M.M. program will create Program Managers who are peers to their engineering team members, but whereas those team members may bring specialist skills in an engineering discipline, the graduate of this program will have specialist skills in program management. The program will:

1. Equip tomorrow’s professionals with the critical thinking and practical skills necessary to make important contributions to their chosen sector and to make Canada a leader in the global market.
2. Capitalize on Vancouver’s industrially diverse environment and UBC’s current stakeholder connections by offering an attractive hands-on education that allows students to get valuable work experience; and allows BC’s companies to benefit from the minds of UBC’s top graduate-level students.
3. Link the concerns of extra-university partners by offering students a project-based curriculum that explores cutting edge concepts in collaboration with sector professionals in the Vancouver region.

4. Emerge as the leading institution for the continuing education of current leaders in the advanced material manufacturing sector and for the training of tomorrow’s leaders.

5. Graduate highly skilled professionals who can fill the jobs gap currently existing and expected to increase in Canada in the foreseeable future.

6. Continue to develop a high profile faculty with international expertise in the theory and practice of the areas advanced materials manufacturing.

2.4.3 Program Learning Outcomes

The learning outcomes of the M.E.L. A.M.M. program are to:

1. Compare materials and processes by which complex multi-material engineering components are produced
2. Analyze structure-property-process paradigm to materials manufacturing systems
3. Assess different materials/processes to make complex components
4. Evaluate risks associated different material solutions
5. Design prototype components
6. Integrate solutions into existing production schemes
7. Plan a development cycle relevant to industry
8. Collect data on production components
9. Evaluate production challenges
10. Assess opportunities to improve production
11. Deliver multidisciplinary projects effectively (project management, leadership and team building, effective communications, sustainability)
12. Use data appropriately for technical and business decision-making
13. Understand the critical components of how business works
14. Appreciate the impact of cross-cutting themes in industry

2.5. Contribution to UBC Mandate and Strategic Plan

UBC is a comprehensive research-intensive university, consistently ranked among the 40 best universities in the world. Since 1915, UBC’s West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning. In Place and Promise: The UBC Plan, our vision statement is: “As one of the world’s leading universities, The University of British Columbia creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world.”

The program will act as one route to the fulfillment of this promise. With the involvement of faculty from all areas in APSC and the Faculty of Commerce and Business Administration; the development of new laboratory facilities and the improvement of existing study spaces; and
collaboration with local stakeholders in the areas of student mentorship, sponsored research topics, and co-op job placements, the program will offer an exceptional learning environment for students and for faculty undertaking research. In addition, the program will attract students from around the world to study in Vancouver’s diverse environment and graduate students who will, in turn, be in demand across the globe.

When we speak of globalization today, it is a synthesis of exploration, learning, and the global exchange of resources and knowledge—not unlike the university itself. Accordingly, the program addresses many of the goals outlined in The UBC Plan:

2.5.1. Student Learning

- The University provides the opportunity for transformative student learning through outstanding teaching and research, enriched educational experiences, and rewarding campus life.

The program will offer a comprehensive curriculum that draws upon the combined expertise of faculty in all areas of APSC, the Faculty of Commerce and Business Administration, and of sector professionals. The program will synthesize theory and practice through a challenging project-based learning experience that will equip students with the skills and experience needed to excel in the world’s most important and fast-growing industries. The number and variety of courses available to students will be purposely limited, as will student enrolment, to ensure a robust and streamlined learning experience that is centered on the program objectives. As well, strong stakeholder support and existing relationships between UBC APSC and local companies promises students both a rich educational experience and employment opportunities after graduation.

2.5.2. Innovation Excellence

- The University creates and advances knowledge and understanding, and improves the quality of life through the discovery, dissemination, and application of research within and across disciplines.

As a leading research and educational facility, UBC is expected to be a world leader, and the Canadian leader in the areas of the M.E.L. A.M.M. program, as we invest time and resources to create, sustain and grow for the future. By expanding UBC’s current scholarship in the areas of this program, UBC will not only be a leader in the exchange of knowledge in these areas; it will also, by contributing to the involved industries, be a central part of the means by which people and knowledge are mobilized.

2.5.3. Community Engagement

- The University serves and engages society to enhance economic, social, and cultural well-being.

Engaging with local companies with regard to the needs of their sector is one of the key components of the program. With a curriculum grounded in collaborative community projects, a
reciprocal and experiential learning environment will be created between students and local stakeholders.

2.5.4. International Engagement

- The University creates rich opportunities for international engagement for students, faculty, staff, and alumni, and collaborates and communicates globally.

The program will graduate students who will be in demand across the globe, from industries that will be based in Canada. It will graduate the trained professionals needed to ensure the self-sufficiency of Canada’s sector-specific professionals, and the global influence of Canada itself. Strong industries, backed by highly qualified professionals, are key to securing Canada’s global presence – to improving and sustaining Canada’s innovation and economy, and strengthening Canada’s contribution to the global market. By offering the program, UBC will therefore become an invaluable player in both national and international development.

2.5.5. Sustainability

- The University explores and exemplifies all aspects of economic, environmental, and social sustainability.

The program will play a role with the rest of the UBC community to meet society’s needs without compromising those of future generations. Through the Platform courses that will have a focus on leadership and sustainability, to the activities and services provided both inside and outside of the classroom, the program is designed to be accountable and transparent in the use of available resources.

2.6. Support for New APSC Professional Master’s Programs

The University supports the formation of new professional master’s programs having goals in alignment with that of the institution. Support and resources are available in a variety of forms including assistance with market research, budgeting, and curriculum development. We have and continue to take advantage of all assistance in the creation, development, delivery and evaluation of the program. As part of the Flexible Learning Initiative, targeted growth of professional master’s programs is one of UBC’s four priorities over the next five years. Continued support for the Flexible Learning Initiative has been confirmed by our new UBC President, Dr. Arvind Gupta. The strategic plan for flexible learning campus-wide is articulated in its own web space, which can be found here: http://flexible.learning.ubc.ca/what-is-flexible-learning/flexible-learning-goals/

APSC has identified its professional master’s programs as having the potential to benefit greatly from not only revitalization, but also expansion. This initiative has been led by the Dean’s office and has received consistent support from the Provost’s Office through the Flexible Learning Initiative. An overarching goal of these new programs is to revitalize the APSC graduate program offerings which have not been systematically redeveloped for over 20 years. New Pillar courses will be available to all Ph.D., M.A.Sc. and Professional Master’s students providing high quality, sector relevant, technically leading edge education for our graduate students. This objective is in
line with the espoused goal of the Faculty of Graduate and Postdoctoral studies to rethink graduate education as a preparation not only for academe but also for service in a wide range of leadership opportunities in society.

2.6.1. Opportunity Identification

It was felt that an opportunity may exist that had, as yet, not been explored in APSC. Given the unique structure of the Faculty, which is home to not only engineering programs, but also the School of Nursing, the School of Architecture and Landscape Architecture and the School of Community and Regional Planning, it was felt that the potential existed to create a suite of interdisciplinary master’s degrees that were aligned with stakeholders in a way that a program housed in a single department or school could not. In order to establish the market for such opportunities, and to establish potential interdisciplinary themes to pursue, the following activities were undertaken:

1. Competitor scans
2. Alumni tracking
3. Ongoing dialogue with stakeholders to identify skills gaps
4. Targeted market research / focus groups
5. Dialogue with faculty to shape opportunities and program champions
6. Initial feasibility assessment
7. Distillation of program concept(s) including clear objectives in launch
8. Straw man concept for new professional program, with clear student target

Figure 4 Relationship of Technical and Leadership Skills for a Sector Specialist

The Sector Specialist is equipped with the skills & perspective to effectively deliver cross-disciplinary projects and operational results
Professional Program Distinctive Value Proposition

- Comprehensive & broad technical skill-set for chosen sector
- Appreciation of how technical skills contribute along the value chain
- Tool-kit of capabilities that support the experienced technical specialist in leading multidisciplinary teams to deliver results
- Valued leader of a high performing technical team in a particular sector
2.6.2. Program Development

Upon successful conclusion of the opportunity identification phase, program development initiated via the steps outlined below, with this document representing the basis of the material required for step 9. A key element that emerged from the opportunity identification phase was a program structure that featured a largely common Platform, comprising approximately 40% of each program, which would be the foundation for all new professional master’s programs in APSC. The remaining 60% of the course content is then comprised of a set of courses drawn from across the Faculty that provide sector-specific technical content. The technical material is referred to as a Pillar. This structure was identified quite early on in the development process and has been referred to internally as a “Platform and Pillar” model from both the curriculum development and delivery perspectives.

1. Appointment of program Champion (Warren Poole)
2. Discussions with advisory committee
3. Refinement of proposition, program design and pricing
4. Definition of operating model / formation of any partnerships
5. Financial modelling
6. Funding application
7. Planning for course (re)design (CTLT)
8. Development of project plan
9. Presentation to Faculty council, Senate, Board, Ministry – and plan refinement as needed
10. Full program design in place
11. Approval from Senate, Board, and Ministry

2.6.3. Implementation

In parallel with the approval process, implementation and launch of the new professional programs will require a significant effort well in advance of the commencement of the programs for the first cohort, which is anticipated for January 2016. Key activities are summarized here:

1. Development of course materials and flexible learning (FL) delivery / co-op modules
2. Development and launch of multi-touch marketing efforts (ideally at least 1 year in advance)
3. Set up in central systems (Enrolment Services, UBC IT)
4. Evaluation of applications (ideally application deadline 7 months in advance) and submission of accepted applications to Department and APSC Dean’s Office for approval
5. Program ready to launch with inaugural group of students

2.6.4. Program Management

Due to the intensive nature of the proposed programs and the expected audience, which would be primarily early career professionals, these programs will require dedicated resources within the Faculty to maintain high-quality, responsive service for administrative details surrounding their delivery (e.g. registration issues, scheduling details, facilitation of workshop activities, co-op placements, coordination of interdisciplinary capstone projects, etc.). Additionally, it is
anticipated that there will be support for maintaining continuous program improvement, sufficient marketing efforts, ongoing development of community partners and stakeholder participants, and so on. The budget for these programs includes provisioning for the necessary staff, to be located in the Faculty, to ensure the ongoing support for the activities itemized below, which are regarded as necessary to deliver and maintain a program of the highest caliber:

1. Continuous feedback loop to improve delivery and learning outcomes
2. Refreshment of marketing materials, with relationships / channels fostered ongoing
3. Exploration / implementation of any content repurposing opportunities
4. Tracking of student success rates
5. Financial / operational management
6. Ongoing evolution of program to achieve learning, access, reputational and financial objectives

2.7. Relationship to Established Programs

2.7.1. The University of British Columbia

Many of the advanced topics that will be covered under the program are already available through programs in the involved departments and schools of APSC at UBC, but the program will synthesize this material and offer a more interdisciplinary approach.

Existing thesis-based master’s program:

Master of Applied Science (M.A.Sc.) specialization in Materials Engineering
Faculty of Graduate and Postdoctoral Studies
The Department of Materials Engineering offers a thesis-based Master of Applied Science (M.A.Sc.) program requiring 18 credits of coursework and a 12-credit thesis. Research foci include composites, microstructure engineering, extractive metallurgy, solidification, biomaterials and ceramics. Nominal completion time for this program is 24 months. This research-based program is designed for students who are interested in a more theoretical, research-based career path and is part of the typical academic path taken by students considering Ph.D. studies. Eligible applicants are offered admission after recommendation by a proposed faculty supervisor in the department of Materials Engineering.

Existing professional programs include:

Master of Engineering (M.Eng.)
Faculty of Applied Science, Engineering
The Master of Engineering is a non-thesis, course-based program designed for students who would like to further their education without pursuing research, or individuals who wish to advance their careers with enhanced technical knowledge. It normally takes 12-16 months to complete 30 credits. Students register for the M.Eng. at the faculty level but generally complete courses within a specific department, and may take a collection of related courses that would be considered a ‘specialization’, although the degree is somewhat generic in that it is simply granted as an M.Eng. in a specific department in most cases. Admission to the M.Eng. is not cohort-based, and the entry point may be either September or January. If there is a demonstrated demand
to continue offering the M.Eng. in addition to the M.E.L. programs, then it is within each individual department’s discretion to do so.

Master of Engineering in Naval Architecture and Marine Engineering (M.Eng. N.A.M.E.)
Faculty of Applied Science, Engineering
The Master of Engineering in Naval and Marine Engineering is a program bearing much in common with the new program being proposed in this document. Both programs are aligned along an industry value chain and were developed in consultation with a multidisciplinary cross-section of faculty and industry advisors. In fact, this program, along with the Master of Engineering in Clean Energy Engineering, served very much as inspiration for the expansion of our professional master’s programs.

Master of Engineering in Clean Energy Engineering (M.Eng. C.E.E.N.)
Faculty of Applied Science, Engineering
The Master of Engineering in Clean Energy Engineering was launched in 2009, and also bears much in common with the new program being proposed in this document in that its focus is an interdisciplinary theme. (Note: Going forward, the C.E.E.N. specialization will be offered under the M.E.L. credential and is included in the suite of new APSC Professional Master’s Programs. Although the M.Eng. C.E.E.N. will no longer be accepting applications, the program will continue until current students graduate.)

2.7.2. Other British Columbia and Canadian universities

There are currently no universities in British Columbia or in Canada that offer accredited graduate programs with the proposed Platform and Pillar structure.

Figure 5 Assessment of Categories of Professional Engineering Master’s Programs
2.7.3. Level of support and recognition from other post-secondary institutions

As a new program, support and recognition from other post-secondary institutions is limited. However, it is anticipated that participation from faculty members outside of UBC delivering content in the program will promote further support from institutions that offer traditional graduate programs in materials both nationally and internationally. Given UBC’s history of expertise in the Pillar area and the fact that UBC’s engineering programs have been ranked second in the nation and among the top 50 worldwide (*Times Higher Education*), it is expected that other post-secondary institutions both in Canada and abroad will recognize and support this program.

2.8. Demand for Program

The demand for professionals with technical and integrated professional skills is growing rapidly, and Canada currently has neither the trained personnel required to meet the needs, nor the means of training them. There are currently no other Canadian institution that offer sector-focused (rather than research-oriented) training at the graduate level with the proposed Platform and Pillar structure.

The demand for the suite of APSC professional master’s programs comes from multiple sides. British Columbia and Canada need the proposed programs for the success of the provincial and federal Pillar industries to stay competitive with international markets. Given UBC’s location, the research of current faculty, and the recent achievements of UBC undergraduate students in the Pillar areas, it is appropriate that UBC be the institution to implement a graduate-level programs that are lacking in Canada and are now more important than ever.

With respect to the specific demand for the M.E.L. A.M.M., in the last decade it has become increasingly clear that advanced economies must reinvent their advanced manufacturing capabilities to remain globally competitive and healthy. From Japan to Europe to the United States, there are major initiatives to resurrect and reinvigorate manufacturing bases, for example more than $1 billion USD to create 10 manufacturing centers in the USA. Historically, as Western manufacturing capabilities hollowed out, universities followed suit and focused their attentions elsewhere. UBC did not follow this trend, and starting in the 1970s established an international presence in knowledge-based materials manufacturing, with luminaries such as Brimacombe and Samarasekera at the lead. The culture and approach they espoused has survived and flourished in the intermediate thirty-plus years, and today UBC is an international leader in advanced materials manufacturing. In particular, a unique set of expertise exists in metals/alloys, composites and the associated manufacturing operations (casting, deformation processing, metal forming, composites (autoclave and out of autoclave processing). As such, the Materials Engineering Department at UBC is uniquely situated to create a new master’s program for engineers working in key high tech manufacturing industries such as aerospace, automotive and others where the latest design solution emphasize multi-material solutions.

2.8.1. Enrolment Predictions and Capacity

Significant demand is anticipated for the new programs. The desirability of an educational
experience that can lead to rapid career progress upon graduation is reflected in the interest we have seen in existing professional Master’s programs.

To maintain a vibrant learning environment and admit the best and brightest applicants, however, the cohort size will be purposely limited. The minimum initial cohort is anticipated to be 20 students increasing to 41 by 2020.

2.8.2. Tuition Rationale

The program falls under the APSC “Guidelines for Professional Programs” (August 31, 2012) which stipulates that new professional programs in the Faculty, as of January 2009, must generate revenue to cover a range of expenses including equipment, facilities and salaries of faculty and staff involved in course delivery and administration. The primary source of revenue for these programs is through the tuition flow-back from the University to the Faculty and unit delivering the program.

The starting tuition level requested for the program is $27,000 CAD for the one-year program for Canadian citizens and Permanent Residents and $46,000 CAD for the one-year program for international students requiring a Study Permit. Tuition is paid in three equal installments per year, normally in January, May and September. The student is required to pay a minimum of three installments of tuition in order to graduate, but if the program is extended by permission of the program Director, the student pays tuition installments until the program requirements are met. For domestic students, the continuing fee and the extension fee are set by the University. No part-time studies are allowed. Currently, tuition increases by 2% each year.

We are confident that the program can attract students to pay the proposed tuition for the following reasons:

1. Vancouver is an acknowledged centre for the Pillar areas
2. A one-year program fits into the lifestyle framework for most of our potential students
3. The program will draw from an international pool of students
4. The tuition has been researched to be positioned in the lower cost bracket compared to programs at institutions such as MIT and Georgia Tech
2.8.3. Scholarships

We are concerned about getting the right students for the program and recognize that the tuition assessment may be prohibitive for some outstanding applicants. As a consequence, we intend to go to stakeholders in each sector seeking named scholarships. We have set aside 7.5 percent of the tuition revenue for financial need.

2.8.4. Potential Sectors of Employment for Graduates

Graduates of the program will have developed those skills and practices that stakeholders value most highly in experienced APSC professionals. They will be creative and visionary to see the potential to use the knowledge and training from the program effectively in their employment choices. Government and the private sector are hungry for experts to develop new processes and systems to explore and implement positive changes in their chosen area. Graduates can expect to find careers locally, nationally, and internationally.

2.8.5. Opportunities for Further Study

The professional master’s degree at UBC is generally not recommended for students who wish to continue on to a Ph.D., and the proposed program will conform to this. As such, it is anticipated that most or all of the graduating students will go on to or return to work in their chosen sector. It is possible, however, that a small number of students will continue to Ph.D.-level study at UBC or elsewhere.
3. Program Description and Specifications

3.1. Admission Requirements

Applicants must normally hold an undergraduate credential in Material Engineering, Mechanical Engineering, Civil Engineering or related discipline with a minimum of 2 years of relevant experience. Please consult <insert web link> for additional details regarding the experience requirements.

The minimum admission requirement for students with degrees from North American institutions is an average of 76% (UBC-equivalency), calculated from senior-level coursework. An applicant with an average slightly less than 76% may be admitted if they have achieved 80% or higher in at least 12 credits (UBC-equivalency) of senior-level coursework in the prospective area of study.

The minimum admission requirement for applicants with degrees from outside North America is an overall degree average of 76% (UBC-equivalency).

Applicants from a university outside Canada in which English is not the primary language of instruction must present evidence of English language proficiency prior to being extended an offer of admission. Acceptable English language proficiency tests for the MEL AMM are:

- TOEFL (Test of English as a Foreign Language): minimum score of 550 (paper version); 213 (computer version); 80 (Internet version, effective September 2005)
- IELTS (International English Language Testing Service): minimum overall band score of 6.5 with no other component score less than 6.0
- MELAB (Michigan English Language Assessment Battery): minimum overall score of 81
- PTE (Pearson Test of English - Academic): minimum overall score of 59
- CELPIP (Canadian English Language Proficiency Index Program): minimum scores; 4L/4L/4L
- CAEL (Canadian Academic English Language Assessment): minimum overall score of 60

Applicants who do not meet both the academic and English language proficiency requirements stated above, but who have had other significant formal training, relevant professional experience, and/or otherwise possess demonstrable knowledge or expertise that would prepare them adequately for successful study in the graduate program, may be granted admission on the recommendation of the Program Director and the approval of the Dean of Applied Science.

Lists of the required application documents are available on the program website. The graduate program office in an area of Specialization is responsible for collection and assessment of application documents.

3.2. Program and Pillar Requirements

The program requires a minimum of 30 credits of coursework. The distribution will be 12 credits dedicated to the Platform providing the professional skills required for an experienced graduate to
be an effective technical manager and 18 credits dedicated to the Pillar advanced technical courses. Both the Platform and the A.M.M. Pillar have prescribed core courses. In general, where a program has a provision for elective choices, master’s programs in the Faculty will allow a maximum of 6 credits of 300- or 400-level undergraduate coursework and 6 credits of 500-level directed studies. The program includes 6 credits of constrained electives that will be drawn from courses approved by the graduate program office. The program will be delivered as an intensive one-year program. It is anticipated that this will be favorable to post-professional students already in the workplace. The program courses will involve a combination of classroom learning and integrated hands-on training.

The students will move through the program as a cohort, to build a community of learners, to challenge assumptions and to support each other’s achievement of the program goals. We will adopt a ‘hybrid’ – flexible delivery model. The learning experiences will include face to face & online learning elements and scheduling will be refined with input from sector experts and the target population of students. We anticipate that there will be intensive sessions in summer term; weekly classes in particular terms & in addition to fieldwork experiences there will be a co-op or practicum option available.

There are seven proposed Pillars leading to the degree of Master of Engineering Leadership at the UBC Vancouver Campus (see Appendix 5 for prospective program curriculum). The Master of Health Leadership and Policy in Seniors Care at the UBC Vancouver Campus will also utilize this Platform. These programs are distinct and each will be reviewed separately, but as all APSC Professional Programs are conceptualized as sharing a common goal of graduating students with enhanced disciplinary knowledge and business skills the proposed array of programs is listed in Appendix 5 for information only.

Figure 7 Learning Objectives Relevant to the Three Levels of the Program
3.3. Platform Structure utilized by the M.E.L. in A.M.M. Program

3.3.1. Leadership & Sustainability (4.5 credits total)

APPP 501 (1.5) Project Management and Leadership
APPP 502 (1.5) Sustainability and Leadership
APPP 503 (1.5) Organizational Leadership

Learning Outcomes
1. Lead multi-disciplinary teams to effectively deliver sustainable projects
2. Articulate ideas, progress and outcomes through oral and written communications
3. Plan & deliver multidisciplinary projects
4. Identify and apply sustainability concepts to influence the triple bottom-line
5. Apply leadership principles to organizational and social change

Content
1. Project management
2. Organizational behaviour and structure
3. Sustainability, ethics and policy
4. Personal and professional leadership effectiveness & communications
5. Application of concepts to trans-disciplinary challenges in organizational and social change
6. Fully integrated into technical streams through sector-relevant projects

3.3.2. Business Foundations (3 credits)

APPP 504 (3) Business Acumen for Technical Leaders

Learning Outcomes
1. Gain broad knowledge of the structure and mechanics of business.
2. How to use data for decision-making
3. Articulate ideas, progress and outcomes through oral and written communication
4. Practical level of understanding in specific aspects of managerial accounting, strategy and performance, market evaluation, operations management, negotiations and contract management and business-case building and valuation

Content
1. Managerial accounting
2. Strategy and performance
3. Market evaluation
4. Operations management
5. Negotiations and contract management
6. Business-case building and evaluation
7. Communication skills

3.3.3. Faculty of Commerce and Business Administration Electives (Select 1.5 credits total)

Learning Outcomes
Gain exposure to non-technical issues and skills that impact business and management
Content (examples of Faculty of Commerce and Business Administration electives, credit values range from 0.7-1.5)
1. BAEN 542 (0.8) Prototyping
2. BAEN 543 (0.7) Disruption
3. BAEN 544 (0.8) Pitching Your Idea
4. BAEN 545 (0.7) Qualitative Models
5. BAEN 546 (0.8) Social Entrepreneurship
6. BAEN 547 (0.7) Innovation and Sustainability
7. BAFI 540 (0.8) Finance
8. BAMA 540 (0.8) Marketing Fundamentals
9. BAMA 541 (0.8) Product Service Management
10. BASC 540 (0.7) Operations Fundamentals
11. BAEN 550 (1.5) Fundamentals in Entrepreneurship
12. BAPA 501 (1.5) Government and Business
13. BAPA 510 (1.5) Public Policy and the Environment
14. BASD 501 (1.5) Corporate Social Responsibility
15. BASD 505 (1.5) Environmental Economics, Management, and Technology
16. BASM 501 (1.5) Business Strategy
17. BAHR 505 (1.5) Leadership
18. BAHR 507 (1.5) Two-Party Negotiations

3.3.4. Analytics and Interpretation for Applied Sciences APPP 505 (3 credits)

Determined by each Pillar and will be used as part of the M.E.L. A.M.M.

Learning Outcomes
1. Ensure competency to perform sector-relevant, deep analytical tasks
2. Recognize data visualization tools and understand how they were created
3. Develop a conceptual understanding of ‘big data’ and predictive analytics for applications in practice
4. Acquire strategies to build a corporate culture around analytics
5. Recognize potential ethics or privacy issues related to data collection or use

3.3.5. Professional Development

Provide support to candidates who wish to broaden their knowledge.
1. Communication Assessment & Support
2. Integrated Sector-specific Experience (Graduate Co-operative Education Program)
3. Employer or Mandatory Sector-specific Project
4. e@UBC Lean Launchpad
5. MITACS Step Business Skills
6. APSC Toastmasters
7. Continuing Studies (PM)
8. APSC Professional Development Workshops
9. English Language Proficiency & Support
10. Data Visualization (VIVA)
11. International Student Support
12. Professional Development Employment Centre (PDEC)

Figure 8 Summary of PDEC Resources

The APSC Professional Program Professional Platform also offers students optimal opportunities to expand their skills through the Professional Development Employment Centre

3.4 Overview of Pillar for M.E.L. in A.M.M.

Value Chain

Material and process selection -> Evaluation and scale up -> Development and pre-production -> Production

Learning Outcomes
1. Compare materials and processes by which complex multi-material engineering components are produced
2. Analyze structure-property-process paradigm for materials manufacturing systems
3. Assess different materials/processes for making complex components
4. Evaluate risks associated with different material solutions
5. Design prototype components
6. Integrate solutions into existing production schemes
7. Plan a development cycle relevant to the focus area
8. Collect data on production components
9. Evaluate production challenges
10. Assess opportunities to improve production
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTRL 512</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MTRL 594</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>APPP 501</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 502</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 505</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Winter Session – Term 2 (January – April)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTRL 512</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MTRL 594</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>APPP 501</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 502</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 505</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Summer Session – Term 1 (May – June); Term 2 (July – August)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTRL 515</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>APPP 503</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 504</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>APSC 412</td>
<td>Co-op placement or an entrepreneurial experience</td>
<td>6*</td>
</tr>
</tbody>
</table>

**Winter Session – Term 1 (September – December)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTRL 517</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Elective Options**

- Electives constrained: 6
- Electives (Faculty of Commerce and Business Administration - current list of approved electives on M.E.L. A.M.M. website): 1.5

**TOTAL CREDITS** 30*

*Note: APSC 412 has a credit value of 6. Students choosing this option should note that these credits are non-additive, meaning they are not counted toward the 30 required program credits. The entrepreneurial experience options also do not have credits that count toward the required program credits.

Constrained Electives (6) A current list of approved electives will be on the M.E.L. A.M.M. program website.

- MTRL 442 (3) Coatings and Surface Modification
- MTRL 472 (3) Welding and joining
- MTRL 475 (3) Microstructure Modelling
- MTRL 494 (3) Composite Materials
- MTRL 558 (3) Corrosion
- MTRL 585 (3) Topics in Fracture Mechanics
3.5. Supervision and Evaluation

Unlike the graduate-level research programs at UBC, a student in the program will not be assigned a single, dedicated supervisor, but will rather be supervised day-to-day in their work by the Pillar Directors and the APSC Professional Program Office. Coursework is evaluated through mini-projects, exams, homework assignments and in-class quizzes. For Pillars having a capstone project as a core component, supervision and evaluation will be provided by a professor and by sector-specific adjuncts, while a Co-operative Education placement will be supervised mainly by the sponsoring company, and given a final mark by a UBC faculty member involved in the professional program based on the company’s report and the student’s final report and presentation. Expectations of students will be formalized through individual course syllabi.

3.6. Policies on Program Management and Assessment

The program will be administered under APSC. In delivering this new responsive model program it is essential that the Dean’s Office, APSC Professional Program Office and Graduate Program Offices responsible for the Pillars collaborate and co-operate in an intimate fashion. The student should have access to all services and needs from within the same Faculty to ensure timely and comprehensive service of their academic and non-academic activities.

In parallel to internal reviews used to evaluate professional degrees conducted according to the APSC and UBC governance guidelines, the program will be evaluated and developed based on the recommendations of an Advisory Committee. This expert panel of outside professionals and academics will meet once per term. Committee membership will be approved by the Dean of APSC.
4. Calendar Statements
[Removed from this document and attached separately for purposes of Curriculum.]

5. Program Resources

5.1. Program Funding and Budget

The program will be delivered as fiscally sustainable. The budget is sensitive to enrolment numbers and has been calculated for an initial enrolment of 20, expected to increase to an enrolment of 41 by 2020.

5.2. Qualified Faculty

Courses will be taught by a combination of faculty from all departments and schools in APSC and also from other faculties at UBC; Visiting Professors, sector-specific adjuncts and guest lecturers will be involved.

5.3. Pillar Champions or Directors

Each Pillar has a ‘Champion’, or in some cases more than one champion, who was instrumental in establishing the value proposition for the Pillar and also in the design of the curriculum. It is expected that these individuals will continue to have an instrumental role in the administration and oversight of the Pillar upon program launch, and may become Program Directors (see 5.5).

5.4. Library Resources

The new courses for this program have been reviewed by the library. The Pillar courses will not require any additional Library support and the Platform courses requiring new resources will be funded by the APSC Dean’s Office (see Appendix 2 & 3 and Appendix 7 Platform Proposal).

5.5. Administration

- **Program Directors**
  The Directors for each Pillar will be appointed by the Dean of APSC. The Director will lead the implementation of the program and oversee its evolution, growth and position within APSC. As well as assuming teaching and research commitments, the program Director will represent the program on university committees. The program Director will also be expected to lead the community outreach component of the program to secure co-op opportunities. The Director will take an active role in developing the necessary community and stakeholder linkages to establish a long-term and wide range of co-op placements. The Director will become the principal point of contact for community and stakeholder partners. The Director will report to the Head of the lead department or school as appointed by the Dean of APSC.

- **Program Manager**
  It is expected that the suite of professional programs will be managed on a day-to-day basis by one or more centrally located program managers. This program manager would assist in: student recruitment, student enquiries, website development and maintenance, applications and
admissions, timetabling, classroom scheduling, extra-curricular events and workshops, and addressing registration inquiries or issues. Support for admissions and records will also be provided by the APSC Dean’s Office.

5.6. Space Requirements

Dedicated space for APSC Professional Programs is being developed within a new building to be completed in 2016. UBC has swing space available which will be used as interim accommodation until new facilities are ready.

5.7. Consultations with University Units

Consultation requests were sent to the following (see Appendix 4):

1. Faculty of Forestry
2. Faculty of Land and Food Systems
3. UBC Sustainability Initiative
4. Faculty of Applied Science, Department of Materials Engineering
5. Faculty of Commerce and Business Administration
6. Faculty of Science

5.8. Contact Information

**Contact Person:**
University of British Columbia, Faculty of Applied Science, Dean’s Office
Elizabeth Croft, Associate Dean, Education & Professional Development
elizabeth.croft@ubc.ca 604-822-6614

6 Appendices Accompanying Pillar Proposals

[Removed for purposes of Curriculum; may be requested.]
### UBC Curriculum Proposal Form

<table>
<thead>
<tr>
<th>Category: (1)</th>
<th>Date: December 19, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty: Faculty of Applied Science (APSC)</td>
<td>Contact Person(s): Faculty of Applied Science Dean’s Office Deborah Feduik (Manager, M.Eng &amp; Graduate Programs) Tel: 604-822-8386 Email: <a href="mailto:gradprog@apsc.ubc.ca">gradprog@apsc.ubc.ca</a></td>
</tr>
<tr>
<td>Faculty Approval Date: December 5, 2014</td>
<td>Effective Session: Winter, Term 2</td>
</tr>
<tr>
<td>Effective Year: 2015-2016</td>
<td>Year: 2015-2016</td>
</tr>
<tr>
<td>Date: December 19, 2014</td>
<td>URL: <a href="http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,195,0,0">http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,195,0,0</a></td>
</tr>
</tbody>
</table>

#### Proposed Calendar Entry:

**Master of Engineering Leadership in Advanced Materials Manufacturing (M.E.L. in A.M.M.)**

#### Program Overview

The Master of Engineering Leadership in Advanced Materials Manufacturing (M.E.L. in A.M.M.) is a program within the Faculty of Applied Science.

The creation of this program has been driven, in part, by strong interest from the Canadian manufacturing community (includes aerospace, automotive and energy transmission whereby British Columbia will see a high level of activity over the next few decades). The objective of this program is to meet an identified need to educate engineers with a unique combination of leadership and strong technical, multi-disciplinary knowledge on multi-material solutions to advanced materials manufacturing.

#### Admission Requirements

Applicants must normally hold an undergraduate credential in Material Engineering, Mechanical Engineering, Civil Engineering or related discipline with a minimum of 2 years of relevant experience. Please consult <insert web link> for additional details regarding the experience requirements.
The minimum admission requirement for students with degrees from North American institutions is an average of 76% (UBC-equivalency), calculated from senior-level coursework. An applicant with an average slightly less than 76% may be admitted if they have achieved 80% or higher in at least 12 credits (UBC-equivalency) of senior-level coursework in the prospective area of study.

The minimum admission requirement for applicants with degrees from outside North America is an overall degree average of 76% (UBC-equivalency).

Applicants from a university outside Canada in which English is not the primary language of instruction must present evidence of English language proficiency prior to being extended an offer of admission. Acceptable English language proficiency tests for the MEL AMM are:

- TOEFL (Test of English as a Foreign Language): minimum score of 550 (paper version); 213 (computer version); 80 (Internet version, effective September 2005)
- IELTS (International English Language Testing Service): minimum overall band score of 6.5 with no other component score less than 6.0
- MELAB (Michigan English Language Assessment Battery): minimum overall score of 81
- PTE (Pearson Test of English - Academic): minimum overall score of 59
- CELPIP (Canadian English Language Proficiency Index Program): minimum scores; 4L/4L/4L
- CAEL (Canadian Academic English Language Assessment): minimum overall score of 60
Applicants who do not meet both the academic and English language proficiency requirements stated above, but who have had other significant formal training, relevant professional experience, and/or otherwise possess demonstrable knowledge or expertise that would prepare them adequately for successful study in the graduate program, may be granted admission on the recommendation of the Program Director and the approval of the Dean of Applied Science.

Lists of the required application documents are available on the program website. The graduate program office in an area of Specialization is responsible for collection and assessment of application documents.

**Transfer Credit**

1. Graduate students who have earned credits outside their current master's program (e.g., from a different university, in a different UBC master's program, as an undergraduate, or as an unclassified student) may transfer up to 12 credits or up to 40% of the total number of credits needed for completion of their current program (whichever is more), provided that:
   - the courses were not used to satisfy the requirements of another credential;
   - the courses were not used as a basis for admission to the graduate degree program;
   - at least a B standing (UBC 74%) was obtained in courses considered for transfer;
   - the courses considered for transfer credit have been taken within five years of commencement of the current degree program.

2. No more than 6 credits of transfer credit may be at the undergraduate level (300-/400-level).

3. The 12-credit (40%) restriction applies to students in UBC-approved Exchange
Agreements established by the UBC Go Global Office.

4. Requests for transfer credit must be accompanied by a letter from the home graduate program addressed to the Dean of the Applied Science. The letter must provide an academic justification for allowing the transfer credit on a course by course basis.

Courses taken as a UBC Access Studies (or non-degree) student may be approved for transfer toward a graduate program (in accordance with transfer credit regulations specified above) with the permission of the graduate program and the Dean of Applied Science.

**Program Requirements**

Degree completion requires completion of 30 credits. This includes 18 credits of Pillar courses, including 6 credits of constrained electives and 12 credits of Platform courses, including 1.5 credits of approved electives from the Faculty of Commerce and Business Administration. Platform refers to foundational coursework focused on the professional skills required for an experienced graduate to be an effective professional leader. These courses are common across many of the Applied Science Professional Master’s programs. The Pillar contains the relevant technical material and is equivalent to a specialization. Each student's coursework must be approved by the M.E.L. A.M.M. graduate program office. Students in the M.E.L. A.M.M. will choose in their second term between a Co-operative Education Placement (APSC 412 non-additive credits not counted in the 30 credits program requirement) and an entrepreneurial experience. A complete list of the courses required for successful completion are available on the program website <insert link>.

**Financial Assistance**
Financial assistance based on academic merit and financial need may be available.

Students should consult the M.E.L. A.M.M. program website for more information.

Contact Information

Faculty of Applied Science
Dean’s Office
5000-2332 Main Mall
Vancouver, BC V6T 1Z4
Email: gradprog@aps.c.ubc.ca
www.aps.c.ubc.ca

<table>
<thead>
<tr>
<th>Faculty: Applied Science</th>
<th>Date: December 2, 2014 [November 3, 2014]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Materials Engineering</td>
<td>Contact Person: Warren Poole</td>
</tr>
<tr>
<td>Faculty Approval Date: December 5, 2014</td>
<td>Phone: 604-822-3674</td>
</tr>
<tr>
<td>Effective Session (W or S): W</td>
<td>Email: <a href="mailto:warren.poole@ubc.ca">warren.poole@ubc.ca</a></td>
</tr>
<tr>
<td>Effective Academic Year: 2015-2016</td>
<td></td>
</tr>
</tbody>
</table>

Proposed Calendar Entry:

MTRL 512 (3) Material Optimization for the Manufacture of Structural Metallic Components

Phase transformations and strengthening of advanced engineering alloys (e.g. steels, aluminum, magnesium and titanium alloys) with particular emphasis on structure-property development relevant to the latest materials manufacturing technologies. *This course is not eligible for Credit/D/Fail grading.*

<table>
<thead>
<tr>
<th>Faculty: Applied Science</th>
<th>Date: December 2, 2014 [November 3, 2014]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Materials Engineering</td>
<td>Contact Person: Warren Poole</td>
</tr>
<tr>
<td>Faculty Approval Date: December 5, 2014</td>
<td>Phone: 604-822-3674</td>
</tr>
</tbody>
</table>

Present Calendar Entry: n/a

Type of Action: Create new course.

Rationale for Proposed Change:

This new course is being created within the Master of Engineering Leadership (M.E.L.) Advanced Materials Manufacturing program. Modern materials manufacturing involves multi-material solutions to create, for example, new automobiles, aircraft or gas turbines. The course surveys the role of microstructure, phase transformations and mechanical behaviour on manufacturability of structural metallic components. Case studies will be used to expose students to concepts related to process simulation in the automotive paint bake cycle, controlled mechanical anisotropy in sheet metal forming, with particular emphasis on structure-property development relevant to the latest materials manufacturing technologies. This course is required since there is currently no course which covers these aspects of materials manufacturing at UBC.
**Effective Session (W or S):** W  
**Effective Academic Year:** 2015-2016  
**Email:** warren.poole@ubc.ca

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th>Present Calendar Entry: n/a</th>
<th>Type of Action: Create new course.</th>
</tr>
</thead>
</table>
| **MTRL 515 (3) Advanced Simulation and Modelling Tools for Materials Manufacturing** | **Rationale for Proposed Change:**  
This new course is being created within the Master of Engineering Leadership (M.E.L.) Pillar in: Advanced Materials Manufacturing. Modern materials manufacturing involves multi-material solutions to create, for example, new automobiles, aircraft or gas turbines. The course will introduce concepts in advanced numerical modeling and commercial software tools focusing on thermal, fluid flow, and continuum mechanics analyses in materials manufacturing. This course is required since there is currently no course which covers these aspects of materials manufacturing at UBC. |  
**Faculty:** Applied Science  
**Department:** Materials Engineering  
**Faculty Approval Date:** December 5, 2014  
**Effective Session (W or S):** W  
**Effective Academic Year:** 2015-2016  
**Date:** December 2, 2014 [November 3, 2014]  
**Contact Person:** Göran Fernlund  
**Phone:** 604-822-3673  
**Email:** goran.fernlund@ubc.ca |

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th>Present Calendar Entry: n/a</th>
<th>Type of Action: Create new course.</th>
</tr>
</thead>
</table>
| **MTRL 517 (3) Case studies in Advanced Materials Manufacturing** | **Rationale for Proposed Change:**  
This new course is being created within the Master of Engineering Leadership (M.E.L.) Pillar in: Advanced Materials Manufacturing. Modern materials manufacturing involves multi-material solutions to create, for example, new automobiles, aircraft or gas turbines. This course is required since there is currently no course where cases studies in advanced materials manufacturing can be examined at UBC. |  
**Faculty:** Applied Science  
**Department:** Materials Engineering  
**Effective Session (W or S):** W  
**Effective Academic Year:** 2015-2016  
**Contact Person:** Göran Fernlund  
**Phone:** 604-822-3673  
**Email:** goran.fernlund@ubc.ca |
To: Vancouver Senate
From: Senate Curriculum & Admissions Committees
Re: Master of Engineering Leadership in Clean Energy Engineering (approval)

The Senate Curriculum and Admissions Committees have reviewed the material forwarded to them by the Faculty of Applied Science and enclose those proposals they deem ready for approval.

The following is recommended to Senate:

Motion: “That the new Master of Engineering Leadership in Clean Energy Engineering (M.E.L.C.E.E.N.) program and its associated new and revised courses be approved.”

Respectfully submitted,

Mrs. Carol Jaeger, Vice-Chair, Senate Curriculum Committee
Dr. Robert Sparks, Chair, Senate Admissions Committee
FACULTY OF APPLIED SCIENCE
New program, and new and revised courses
Master of Engineering Leadership in Clean Energy Engineering; CEEN 503 (2)
Sustainable Energy Systems; CEEN 504 (2) Energy Storage and Transmission; CEEN
523 (3) Energy and the Environment; CEEN 525 (2) Energy Policy; CEEN 550 (3)
Energy Efficiency and Conservation
Memo

To: Paul Harrison, Chair, Senate Academic Policy Committee

From: David Farrar, Provost and Vice-President Academic

Date: January 15, 2015

Re: Administration of Master of Engineering Leadership Programs

The Dean of the Faculty of Applied Science has requested that the proposed new graduate professional programs be officially designated as professional programs and that they be administered by the Faculty of Applied Science rather than by the Faculty of Graduate and Postdoctoral Studies.

The proposed programs are:

- Master of Engineering Leadership in Advanced Materials Manufacturing
- Master of Engineering Leadership in Clean Energy Engineering
- Master of Engineering Leadership in Dependable Software Systems
- Master of Engineering Leadership in Green Bio-Products
- Master of Engineering Leadership in Integrated Water Management
- Master of Engineering Leadership in Naval Architecture and Marine Engineering
- Master of Engineering Leadership in Urban Systems
- Master of Health Leadership in Seniors Care

1. I am satisfied that these programs meet the criteria for designation as professional graduate programs.

2. For the reasons outlined below, I support these programs being administered by the Faculty of Applied Science

   a) All criteria laid out "Optional Transfer of Professional Graduate Programs from the Faculty of Graduate and Postdoctoral Studies to the Disciplinary Faculties" document, approved by Senate in January of 2005, have been met

   b) The Faculty of Applied Science has been successfully handling the administration of the Master of Engineering programs for nearly a decade. In that time, the Faculty of Applied Science gained considerable experience in effective graduate program administration. There is a healthy and productive relationship between the Faculty of Graduate and Postdoctoral Studies and Applied Science which all expect to continue.

   c) The Faculty of Applied Science has the resources, including staff and financial resources, to provide the suite of services the Faculty of Graduate and Postdoctoral Studies provides for most graduate programs including financial support for students, student appeals, and matters relating to admissions and compliance with requirements for degree completion.
d) This does not set a precedent. Decisions about the administration of future new graduate professional programs will be made in accordance with the guidelines approved by Senate in January, 2005.

e) I have consulted with Vice-Provost and Dean, Graduate and Postdoctoral Studies, Dr. Susan Porter. She agrees to this request because the M.Eng. Programs are already administered by the Faculty of Applied Science, and the Masters of Engineering Leadership are closely related to the M.Eng. programs.
EXECUTIVE SUMMARY
MASTER OF ENGINEERING LEADERSHIP IN CLEAN ENERGY ENGINEERING
FACULTY OF APPLIED SCIENCE
UNIVERSITY OF BRITISH COLUMBIA
JANUARY 26, 2015

Overview
The University of British Columbia is a comprehensive research-intensive university, consistently ranked among the 40 best universities in the world. It creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world. Since 1915, UBC's West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning. The program strives to provide students with a comprehensive and innovative education that enables them build on their past work experience and technical skills, adding leadership and interdisciplinary opportunities for learning and interaction with other students. The program will position UBC as a leading institution for continuing education training of leaders in the field of study. Consultation with stakeholders has revealed that experienced engineers and early career professionals in the chosen focus areas require sector-relevant, cross-disciplinary technical skills. They also require project management, communication and business skills to be effective leaders. And few, if any, schools in Canada and the United States of America offer this combination of skills in a technical master’s program.

The currently offered Master of Engineering in Clean Energy Engineering (M.Eng. C.E.E.N.) was initiated in September 2009 by UBC’s Clean Energy Research Centre. This unique, interdisciplinary graduate program was developed with generous support and in collaboration with industrial partners such as BC Hydro and FortisBC, who recognized the importance and the opportunity to establish such program in BC. Over the last five years the program has grown to a steady intake of 30 excellent students annually, and in 2014 has reached a significant milestone of 100 alumni. The Clean Energy Engineering program has gained reputation and it is now internationally recognized by its unique approach to a variety of topics related to clean energy from energy generation technologies to energy distribution, management, conservation, environmental impact and energy policy. The current cohort of students will matriculate with the curriculum program requirements and the degree designation of M.Eng. C.E.E.N. Going forward, applicants will apply to the new program being proposed in this document, the Master of Engineering Leadership in Clean Energy Engineering (M.E.L. C.E.E.N.).

Credential
The credential awarded will be the Master of Engineering Leadership (M.E.L.) in Clean Energy Engineering (C.E.E.N.). The degree will be a master’s degree with a balance between advanced engineering theories, interdisciplinary knowledge and real-world applications. The field of study will be advanced technology and techniques for clean energy engineering applications.
Location
The Vancouver Campus of UBC is the main location for classroom education and administration. Course instruction and assignments will be achieved through collaborations among UBC, provincial and federal agencies and local private sector stakeholders involved in materials manufacturing research and development.

Faculty Offering Program
The program will be offered formally, administered and delivered by the Faculty of Applied Science, UBC.

Program Start Date
The program will be offered in the 2015/2016 academic year, beginning in January 2016.

Program Completion Time
Anticipated time for completion of the program is 1 year of full-time academic study, including any work-term placements and non-academic activities.

Objectives of the Proposed Program
The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses. Some large corporations and government activities within the field find themselves deploying skilled business personnel to lead engineering teams. Often this results in a “communications gap” between managers and technical staff thus impairing team effectiveness. The M.E.L. C.E.E.N. program will create Program Managers who are peers to their engineering team members, but whereas those team members may bring specialist skills in an engineering discipline, the graduate of this program will have specialist skills in program management. The program will:

- Equip tomorrow’s professionals with the critical thinking and practical skills necessary to make important contributions to their chosen sector and to make Canada a leader in the global market.
- Capitalize on Vancouver’s industrially diverse environment and UBC’s current stakeholder connections by offering an attractive hands-on education that allows students to get valuable work experience; and allows BC’s companies to benefit from the minds of UBC’s top graduate-level students.
- Link the concerns of extra-university partners by offering students a project-based curriculum that explores cutting edge concepts in collaboration with sector professionals in the Vancouver region.
- Emerge as the leading institution for the continuing education of current leaders in the clean energy engineering sector and for the training of tomorrow’s leaders.
- Graduate highly skilled professionals who can fill the jobs gap currently existing and expected to increase in Canada in the foreseeable future.
- Continue to develop a high profile faculty with international expertise in the theory and practice of clean energy engineering.

Program Learning Outcomes
The M.E.L. C.E.E.N. program provides students with advanced knowledge in various aspects of energy conversion, distribution, storage and management, including renewable energy
technologies, energy distribution networks and energy policy. It is designed to educate and challenge students to think critically about topics related to energy conservation and efficiency, energy and environment, and social impact. A modern curriculum is based on innovative teaching strategies which include a key feature of organizing and promoting interaction between students and industrial partners through seminars, debates on advanced energy related topics, industrially sponsored projects and conferences. The program learning outcomes include:

- Comprehensive technical and practical understanding of conventional thermal systems and alternative energy technologies.
- Understanding of energy storage and transportation in terms of both technology and optimization.
- Comprehensive technical and operational understanding of Strategic Energy Management.
- Comprehensive understanding of the impact of various energy systems on the ecosystems and environment, and potential routes to reducing pollution and developing sustainable clean energy systems.
- Understanding of the social and political dimension of energy efficiency and conservation, energy policy and economics.
- Ability to deliver of multidisciplinary projects effectively (project management, leadership and team building, effective communications, sustainability).
- Ability to use data appropriately for technical and business decision-making.
- Understanding of the critical components of how business works.
- Appreciation of the impact of cross-cutting themes in industry.

**Contribution to UBC’s Mandate and Strategic Plan**

In *Place and Promise: The UBC Plan*, our vision statement is: “As one of the world’s leading universities, The University of British Columbia creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world.” The program will act as one route to the fulfillment of this promise. With the involvement of faculty from all areas in APSC and the partnership of the Faculty of Commerce and Business Administration; the development of new facilities and the improvement of existing study spaces; and collaboration with local stakeholders in the areas of student mentorship, sponsored project topics, and co-op job placements, the program will offer an exceptional learning environment for students and faculty. In addition, the program will attract students from around the world to study in Vancouver’s diverse environment and graduate students, who will, in turn, be in demand across the globe. The program will act as one route to the fulfillment of this promise. With the involvement of faculty from all areas in APSC and partnerships with the Faculty of Commerce and Business Administration; the development of new facilities and the improvement of existing study spaces; and collaboration with local stakeholders in the areas of student mentorship, sponsored project topics, and co-op job placements, the program will offer an exceptional learning environment for students and faculty. In addition, the program will attract students from around the world to study in Vancouver’s diverse environment and graduate students who will, in turn, be in demand across the globe.
**Delivery Methods**
The Faculty of Applied Science (APSC) has taken the lead in developing a conceptual framework for new Professional Programs comprising a common “Platform” that provides the professional skills required for an experienced graduate to be an effective professional leader, with “Pillars” of specialization courses in particular sectors relevant to APSC’s educational mission and professional communities (the term Platform refers to foundation coursework focused on project management, data analysis, and leadership skills, while the term Pillar is equivalent to specialization). The program will be delivered as an intensive one-year program. It is anticipated that this program will be favourable to post-professional students already in the workplace. The Platform will be delivered by faculty from APSC and the Faculty of Commerce and Business Administration. The inclusion of the M.E.L. C.E.E.N. program in the suite of new APSC Professional Master’s Programs is a logical step forward. Offering the C.E.E.N specialization as a Pillar under the M.E.L. credential will allow the program to benefit greatly from the new Platform courses, from the strong leadership and academic excellence of host departments, while at the same time keeping its uniqueness and quality as the top clean energy program in Canada with a strong link to the Clean Energy Research Centre. It will be offered to qualified engineering and selected science graduates seeking to acquire advanced training in engineering science, management and organizational behaviour, and leadership for the practice of engineering and organizational leadership in the broad area of clean energy.

The program requires a minimum of 30 credits of coursework. The distribution will be 12 credits dedicated to the Platform providing the professional skills required for an experienced graduate to be an effective technical manager and 18 credits dedicated to the Pillar in advanced technical courses. Both the Platform and the Pillar have prescribed core courses. For this program there will be no free electives. The Platform will be delivered by the faculty of APSC and the Faculty of Commerce and Business Administration. The Pillar courses will be delivered by faculty from the Department of Mechanical Engineering and the Department of Chemical and Biological Engineering. Industry mentors will also participate in the Pillar courses as guest lecturers and project advisors as currently exists in the M.Eng C.E.E.N. program.

**Program Strengths**
The program offers a comprehensive curriculum that is grounded in collaborative projects embedded in the Platform coursework, and that draws upon the combined expertise of faculty in the participating units.

**Related Programs at UBC or other BC Post-secondary Institutions**
A selection of courses offered through existing graduate programs will be used for the new program as well as the creation of new courses. There are currently no existing programs at UBC or with British Columbia that offer this program’s combination of technical skills and advanced leadership training.

**Institutional Contact**
University of British Columbia
Faculty of Applied Science
Elizabeth Croft, Associate Dean, Education and Professional Development
604-822-6614 elizabeth.croft@ubc.ca
Appendix to the Executive Summary (for internal UBC purposes only)
Briefly describe the resources that will be required for the program:

Budget and Funding
The program will be delivered as fiscally sustainable. Tuition is $27,000 per year for domestic students and $46,000 per year for international students. The existing program M.Eng C.E.E.N. has reached a steady state intake of 30 students and it is anticipated that the M.E.L. C.E.E.N. will attract more qualified applicants. To maintain a vibrant learning environment and admit the best and brightest applicants, however, the M.E.L. C.E.E.N. cohort size will be purposely limited to 40 by 2020. The program will not impact the enrolment of existing professional master’s programs such as the M.Eng CHBE or M.Eng MECH which attract students who have obtained less than 3 years of relevant work experience since they finished their bachelor’s program and have different admission requirements.

Space Requirements
Dedicated space for APSC Professional Programs is being developed within a new building to be completed in 2016. UBC has swing space available which will be used as interim accommodation until new facilities are ready.

Library
The new courses for this program have been reviewed by the library. The Pillar courses will not require any additional Library support, and the Platform courses requiring new resources will be funded by the APSC Dean’s Office. (See Appendix 2 and 3 and Appendix 7 Platform Proposal)
1. Introduction

This proposal represents one of a suite of new professional programs to be offered at the master’s level in the Faculty of Applied Science (APSC). The programs were developed in parallel and will be delivered in parallel. That is, there will be a common start date and timeline for cohorts in all of the programs. A key feature of this suite of programs is that they are structured in two parts, which will be referred to as the “Platform” and the discipline-specific “Pillar”. The Platform is foundational coursework focused on project management, data analysis, and leadership skills. It is a largely common element accessible to the suite of new APSC professional programs. The Pillar is equivalent to a specialization. It contains technical material specific to Clean Energy Engineering. Successful completion of the Platform and the C.E.E.N. Pillar will result in the granting of one degree: Master of Engineering Leadership in Clean Energy Engineering (M.E.L. C.E.E.N.). Details of the contents of both the Platform and C.E.E.N. Pillar are documented in this proposal.

2. Program Rationale

2.1. Defining the Need for the Program

Over the past year, members of the University’s Flexible Learning Initiative and the APSC Dean’s office have formed and worked closely with a Program Advisory Committee consisting of faculty from all areas of APSC. The following program proposal is the result of collaborative planning on the part of this committee.

2.2. Professional Program Mission Statement and Context

The University of British Columbia, Faculty of Applied Science, wishes to attract students into a high quality, sector-focused, distinctive and integrated Applied Science Professional Program that has resources to be delivered sustainably and fiscally meets the University’s goals.

1. UBC continues to encourage innovative learning approaches within the fiscal model of cost recovery.
2. The Flexible Learning Strategy introduced in 2014 lists the development of new Professional Programs as a priority.

UBC has the opportunity to deliver a distinctive APSC Program in line with the University’s Professional Program objectives.

2.3. Applied Science Professional Program Approach

2.3.1. Guiding Principles of the Program Advisory Committee

1. There will be meaningful engagement with stakeholders in market research, development, delivery and career opportunities.
2. Our target market is candidates who might consider either an M.B.A. or M.Eng. Management, but would prefer to develop both sector-relevant technical skills and management and leadership skills – our program will be distinctive in the market.

3. We will take advantage of a standardization of core courses to improve quality of offering while reducing costs and complexity.

4. The program will be positioned as a premium alternative to a conventional professional master’s program by offering distinctive, high quality, cross-disciplinary technical and non-technical skills to the experienced professional who wants to become a Sector Specialist.

5. Pillars are developed around areas of unique research and teaching strength in APSC, where multiple program “Faculty Champions” are identified, that have strong relevance to our professional community and societal benefit, have strong learner demand, and have strong industry demand for people trained in this sector.

6. Graduate courses offered in the C.E.E.N. Pillar will be open to all APSC graduate students with the appropriate prerequisites, as well as students in other graduate programs, space permitting. This will allow APSC to revitalize our graduate program offerings around areas of research and teaching strength, build strong interdisciplinary sector training capacity, and improve our connections to our professional community.

2.3.2. Extensive Market Research was used to develop the Value Propositions

In order to establish the viability of offering new programs, the following activities were undertaken to validate the structure and proposed C.E.E.N. Pillar. Market research is provided in Appendix 6.

The objectives and curriculum were developed in conjunction with meaningful stakeholder consultation in three phases.

1. Market research & concept development conducted through:

   a. Multiple meetings of the Inter-Disciplinary Working Committee of Applied Science that included the following core members:
      i. Elizabeth Croft (Associate Dean)
      ii. James Olson (Associate Dean)
      iii. Hugh Brock (Vice Provost)
      iv. Reza Vaziri (Department Head, Civil Engineering)
      v. Peter Englezos (Department Head, Chemical and Biological Engineering)
      vi. Sathish Gopalakrishnan (Professor, Electrical Engineering)
      vii. Scott Dunbar (Department Head, Mining Engineering)
      viii. Walter Merida (Director, Clean Energy Research Centre)
      ix. Jon Mikkelson (Director, Naval Architecture & Marine Engineering)
2. Validation by external sector expert

Validation: Robert Greenwald, President of Prism Engineering: May 30 2014

3. Refinement through sector experts


Neils Broers BC Hydro
Chris Reid Hydrexia
David Bennet Fortis
Neil Huff Foresight
Patric Ouellette Westport Innovations

The new program M.E.L. C.E.E.N. (recognized as an improved format over the existing M.Eng. program) has received unanimous support from the Industry Validation and Focus Group for implementation January 2016. The Focus Group commented positively both on the format and the content of the program. In particular, the inclusion of the Platform courses were well received and it was recognized that this approach could add a distinctiveness from the common M.B.A. in the job market, while at the same time building on technical skills of C.E.E.N. students through sector relevant technical courses in the Pillar. More specific comments from the focus group are in agreement with the “Market Insights” listed below.

2.3.3. Market Insights

Consistently repeated messages, related to the potential student market and the relevance of the particular focus areas, were heard through all market research activities outlined above. For example:

1. Experienced engineers in their chosen careers require sector-relevant, cross-disciplinary technical skills.
2. Engineers require project management, communication and business skills to be effective leaders.
3. Few, if any, schools in Canada and the United States of America offer this combination of skills in a technical master’s program.
4. There is a demonstrated need for a program. (Figure 1)
5. Students are willing to apply to graduate-level programs that are relevant to the stakeholders in their chosen sector. (Figure 2)
2.4. Program Overview
2.4.1. Mission

The M.E.L. C.E.E.N. program strives to provide students with a comprehensive and innovative education that will enable them to advance their career in a path that is different from the traditional APSC course-based master’s or the Master of Business Administration (M.B.A.). The program is structured to provide a combination of advanced technical skills, integrated with professional skills, which will enable graduates to practice these skills and advance their career trajectory in their chosen industries.

The demand for professionals with technical and integrated professional skills is growing rapidly, and Canada currently has neither the trained personnel required to meet the needs, nor the means of training them. There are currently no other Canadian institutions that offer sector-focused (rather than research-oriented) training at the graduate level with the proposed Platform and Pillar structure.

The demand for this program comes from multiple sides. British Columbia and Canada need the proposed program for the success of the provincial and federal Pillar industries to stay competitive with international markets. Given UBC’s location, the research of current faculty, and the recent achievements of UBC undergraduate students in the Pillar areas, it is appropriate that UBC be the institution to implement a graduate-level program that is lacking in Canada and is now more important than ever.

Figure 3 Placement of New Program Sector Specialist with Existing Programs

**The UBC APSC Professional Programs (PP) portfolio targets experienced graduates who wish to become Sector Specialists**

- **Skills required:**
  - General management skills
  - Skills to deliver project and operational results
  - Sector-relevant, cross-disciplinary technical skills

- **Career path:**
  - Graduate (0 years)
  - Junior (<3 years)
  - Experienced (>3 years)
  - Senior (>10 years)

- **Focused technical Skills:**
  - BASc/BSN
  - MASc/MSN/MN Current M.Eng.
  - PhD Postdoc

- **Positioning:**
  - Market insights
  - Business track (Sauder)
  - Sector Specialist Track (Professional Programs)
  - Technical Specialist Track (current APSC)

**Sector Specialist:**
- Alternative track which meets sector operational needs
- Deep sector relevance from both technical and economic perspectives
- Valued leader of a high performing technical team in a particular sector

Source: APEGBC, UBC, team


2.4.2. Objectives of the Proposed Program

The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses. Some large corporations and government activities within the field find themselves deploying skilled business personnel to lead engineering teams. Often this results in a ‘communications gap’ between managers and technical staff thus impairing team effectiveness. The M.E.L. C.E.E.N. program will create Program Managers who are peers to their engineering team members, but whereas those team members may bring specialist skills in an engineering discipline, the graduate of this program will have specialist skills in program management. The program will:

1. Equip tomorrow’s professionals with the critical thinking and practical skills necessary to make important contributions to their chosen sector and to make Canada a leader in the global market.

2. Capitalize on Vancouver’s industrially diverse environment and UBC’s current stakeholder connections by offering an attractive hands-on education that allows students to get valuable work experience; and allows BC’s companies to benefit from the minds of UBC’s top graduate-level students.

3. Link the concerns of extra-university partners by offering students a project-based curriculum that explores cutting edge concepts in collaboration with sector professionals in the Vancouver region.

4. Emerge as the leading institution for the continuing education of current leaders in the clean energy engineering sector and for the training of tomorrow’s leaders.

5. Graduate highly skilled professionals who can fill the jobs gap currently existing and expected to increase in Canada in the foreseeable future.

6. Continue to develop a high profile faculty with international expertise in the theory and practice of clean energy engineering.

2.4.3 Program Learning Outcomes

The objective of the Clean Energy Program is to provide students with advanced knowledge in various aspects of energy conversion, distribution, storage and management, including renewable energy technologies, energy distribution networks and energy policy. It is designed to educate and challenge students to critical thinking about topics related to energy conservation and efficiency, energy and environment, and social impact. A modern curriculum is based on innovative teaching strategies which include a key feature of organizing and promoting interaction between students and industrial partners through seminars, debates on advanced energy related topics, industrially sponsored projects and conferences. The program learning outcomes include:

- Comprehensive technical and practical understanding of conventional thermal systems and alternative energy technologies.
Understanding of energy storage and transportation in terms of both technology and optimization.

- Comprehensive technical and operational understanding of Strategic Energy Management.
- Comprehensive understanding of the impact of various energy systems on the ecosystems and environment, and potential routes to reducing pollution and developing sustainable clean energy systems.
- Understanding of the social and political dimension of energy efficiency and conservation, energy policy and economics.
- Ability to deliver of multidisciplinary projects effectively (project management, leadership and team building, effective communications, sustainability).
- Ability to use data appropriately for technical and business decision-making.
- Understanding of the critical components of how business works.
- Appreciation of the impact of cross-cutting themes in industry.

2.5. Contribution to UBC Mandate and Strategic Plan

UBC is a comprehensive research-intensive university, consistently ranked among the 40 best universities in the world. Since 1915, UBC’s West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning. In Place and Promise: The UBC Plan, our vision statement is: “As one of the world’s leading universities, The University of British Columbia creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world.”

The program will act as one route to the fulfillment of this promise. With the involvement of faculty from all areas in APSC and the Faculty of Commerce and Business Administration; the development of new laboratory facilities and the improvement of existing study spaces; and collaboration with local stakeholders in the areas of student mentorship, sponsored research topics, and co-op job placements, the program will offer an exceptional learning environment for students and for faculty undertaking research. In addition, the program will attract students from around the world to study in Vancouver’s diverse environment and graduate students, who will, in turn, be in demand across the globe.

When we speak of globalization today, it is a synthesis of exploration, learning, and the global exchange of resources and knowledge—not unlike the university itself. Accordingly, the program addresses many of the goals outlined in The UBC Plan:

2.5.1. Student Learning

- The University provides the opportunity for transformative student learning through outstanding teaching and research, enriched educational experiences, and rewarding
campus life.

The M.E.L. C.E.E.N. program will offer a comprehensive curriculum that draws upon the combined expertise of faculty in all areas of APSC and relevant partner Faculties such as the Faculty of Commerce and Business Administration, and of industry sector professionals. The program will synthesize theory and practice through a challenging project-based learning experience that will equip students with the skills and experience needed to excel in the world’s most important and fast-growing industries. The number and variety of courses available to students will be purposely limited, as will student enrolment, to ensure a robust and streamlined learning experience that is centered on the program objectives. As well, strong stakeholder support and existing relationships between UBC APSC and local companies promises students both a rich educational experience and employment opportunities after graduation.

2.5.2. Innovation Excellence

- The University creates and advances knowledge and understanding, and improves the quality of life through the discovery, dissemination, and application of research within and across disciplines.

As a leading research and educational facility, UBC is expected to be a world leader, and the Canadian leader in the areas of the M.E.L. C.E.E.N. program, as we invest time and resources to create, sustain and grow for the future. By expanding UBC’s current scholarship in the areas of this program, UBC will not only be a leader in the exchange of knowledge in these areas; it will also, by contributing to the involved industries, be a central part of the means by which people and knowledge are mobilized.

2.5.3. Community Engagement

- The University serves and engages society to enhance economic, social, and cultural well-being.

Engaging with local companies with regard to the needs of their sector is one of the key components of the program. With a curriculum grounded in collaborative community projects, a reciprocal and experiential learning environment will be created between students and local stakeholders.

2.5.4. International Engagement

- The University creates rich opportunities for international engagement for students, faculty, staff, and alumni, and collaborates and communicates globally.

The program will graduate students who will be in demand across the globe. It will graduate the trained professionals needed to ensure the self-sufficiency of Canada’s sector-specific professionals, and the global influence of Canada itself. Strong industries, backed by highly qualified professionals, are key to securing Canada’s global presence – to improving and sustaining Canada’s innovation and economy, and strengthening Canada’s
contribution to the global market. By offering the M.E.L. C.E.E.N. program, UBC will therefore become an invaluable player in both national and international development.

### 2.5.5. Sustainability

- The University explores and exemplifies all aspects of economic, environmental, and social sustainability.

The program will play a role with the rest of the UBC community to meet society’s needs without compromising those of future generations. Through the Platform courses that will have a focus on leadership and sustainability, to the activities and services provided both inside and outside of the classroom, the program is designed to be accountable and transparent in the use of available resources.

### 2.6. Support for New APSC Professional Master’s Programs

The University supports the formation of new professional master’s programs having goals in alignment with that of the institution. Support and resources are available in a variety of forms including assistance with market research, budgeting, and curriculum development. We have and continue to take advantage of all assistance in the creation, delivery, and evaluation of the program. As part of the Flexible Learning Initiative, targeted growth of professional master’s programs is one of UBC’s four priorities over the next five years. Continued support for the Flexible Learning Initiative has been confirmed by our new UBC President, Dr. Arvind Gupta. The strategic plan for flexible learning campus-wide is articulated in its own web space, which can be found here: [http://flexible.learning.ubc.ca/what-is-flexible-learning/flexible-learning-goals/](http://flexible.learning.ubc.ca/what-is-flexible-learning/flexible-learning-goals/)

APSC has identified its Professional Master’s Programs as having the potential to benefit greatly from not only revitalization, but also expansion. This initiative has been led by the Dean’s office and has received consistent support from the Provost’s Office through the Flexible Learning Initiative.

An overarching goal of these new programs is to revitalize the APSC graduate program offerings which have not been systematically redeveloped for over 20 years. New Pillar courses will be available to all Ph.D., M.A.Sc. and Professional Master’s students providing high quality, sector relevant, technically leading edge education for our graduate students. This objective is in line with the espoused goal of the Faculty of Graduate and Postdoctoral studies to rethink graduate education as a preparation not only for academe but also for service in a wide range of leadership opportunities in society.

### 2.6.1. Opportunity Identification

It was felt that an opportunity may exist that had, as yet, not been explored in APSC. Given the unique structure of the faculty, which is home to not only engineering programs, but also the School of Nursing, the School of Architecture and Landscape Architecture and the School of Community and Regional Planning, it was felt that the potential existed to create a suite of interdisciplinary master’s degrees that were aligned with stakeholders in a way that a program housed in a single department or school could not. In order to establish
the market for such opportunities, and to establish potential interdisciplinary themes to pursue, the following activities were undertaken:

1. Competitor scans
2. Alumni tracking
3. Ongoing dialogue with stakeholders to identify skills gaps
4. Targeted market research / focus groups
5. Dialogue with faculty to shape opportunities and program champions
6. Initial feasibility assessment
7. Distillation of program concept(s) including clear objectives in launch
8. Straw man concept for new professional program, with clear student target

Figure 4 Relationship of Technical and Leadership Skills for a Sector Specialist

2.6.2. Program Development

Upon successful conclusion of the opportunity identification phase, program development initiated via the steps outlined below, with this document representing the basis of the material required for step 9. A key element that emerged from the opportunity identification phase was a program structure that featured a largely common Platform, comprising approximately 40% of each program, which would be the foundation for all new Professional Master’s Programs in APSC. The remaining 60% of the course content is then comprised of a set of courses drawn from across the Faculty that provide sector-specific technical content. The technical material is referred to as a Pillar. This structure was identified quite early on in the development process and has been referred to internally as a “Platform and Pillar” model from both the curriculum development and delivery perspectives.
1. Appointment of Program Champion (Vladan Prodanovic, Associate Director, Senior Instructor – works in close consultation with the Director of the Clean Energy Research Centre Walter Merida) (see section 3.5)
2. Discussions with C.E.E.N. advisory committee
3. Refinement of proposition, program design and pricing
4. Definition of operating model / formation of any partnerships
5. Financial modelling
6. Funding application
7. Planning for course (re)design (CTLT)
8. Development of project plan
9. Presentation to Faculty council, Senate, Board, Ministry – and plan refinement as needed
10. Full program design in place
11. Approval from Senate, Board and Ministry

2.6.3. Implementation

In parallel with the approval process, implementation and launch of the new Professional Programs will require a significant effort well in advance of the commencement of the programs for the first cohort, which is anticipated for January 2016. Key activities are summarized here:

1. Development of course materials and flexible learning (FL) delivery / co-op modules
2. Development and launch of multi-touch marketing efforts (ideally at least one year in advance)
3. Set up in central systems (Enrolment Services, UBC IT)
4. Evaluation of applications (ideally application deadline seven months in advance) and submission of accepted applications to Department and APSC Dean’s Office for approval
5. Program ready to launch with inaugural group of students

2.6.4. Program Management

Due to the intensive nature of the proposed programs and the expected audience, which would be primarily early career professionals, these programs will require dedicated resources within the Faculty to maintain high-quality, responsive service for administrative details surrounding their delivery (e.g. registration issues, scheduling details, facilitation of workshop activities, co-op placements, coordination of interdisciplinary capstone projects, etc.). Additionally, it is anticipated that there will be support for maintaining continuous program improvement, sufficient marketing efforts, ongoing development of community partners and stakeholder participants, and so on. The budget for these programs includes provisioning for the necessary staff, to be located in the Faculty, to ensure the ongoing support for the activities itemized below, which are regarded as necessary to deliver and maintain a program of the highest caliber:

1. Continuous feedback loop to improve delivery and learning outcomes
2. Refreshment of marketing materials, with relationships / channels fostered ongoing
3. Exploration / implementation of any content repurposing opportunities
4. Tracking of student success rates
5. Financial / operational management
6. Ongoing evolution of program to achieve learning, access, reputational and financial objectives

2.7. Relationship to Established Programs

2.7.1. The University of British Columbia

Many of the advanced topics that will be covered under the program are already available through programs in the involved departments and schools of APSC at UBC, but the program will synthesize this material and offer a more interdisciplinary approach.

Existing professional programs include:

Master of Engineering (M.Eng.)
Faculty of Applied Science, Engineering
The Master of Engineering is a non-thesis, course-based program designed for students who would like to further their education without pursuing research, or individuals who wish to advance their careers with enhanced technical knowledge. It normally takes 12-16 months to complete 30 credits. Students register for the M.Eng. at the faculty level but generally complete courses within a specific department, and may take a collection of related courses that would be considered a ‘Specialization’, although the degree is somewhat generic in that it is simply granted as a M.Eng. in a specific department in most cases. The admission to the M.Eng. is not cohort-based, and the entry point may be either September or January. If there is a demonstrated demand to continue offering the M.Eng in addition to the M.E.L. programs, then it is within each individual department’s discretion to do so.

Master of Engineering in Naval Architecture and Marine Engineering (M.Eng. N.A.M.E.)
Faculty of Applied Science, Engineering
The Master of Engineering in Naval and Marine Engineering is a program bearing much in common with the new program being proposed in this document. Both programs are aligned along an industry value chain and were developed in consultation with a multidisciplinary cross-section of faculty and industry advisors. In fact, this program, along with the Master of Engineering in Clean Energy Engineering, served very much as inspiration for the expansion of our professional master’s programs.

Master of Engineering in Clean Energy Engineering (M.Eng. C.E.E.N.)
Faculty of Applied Science, Engineering
The Master of Engineering in Clean Energy Engineering was launched in 2009, and also bears much in common with the new programs being proposed in this document in that its focus is an interdisciplinary theme. Going forward, the CEEN specialization will be offered under the M.E.L. credential and is included in the suite of new APSC professional master’s programs. Although the M.Eng. CEEN will no longer be accepting applications,
the program will continue until current students graduate. The current cohort of students will matriculate with the original curriculum program requirements and the degree designation of M.Eng. C.E.E.N.

2.7.2. Other British Columbia and Canadian universities

There are currently no universities in British Columbia or in Canada that offer accredited graduate programs with the proposed Platform and Pillar structure.

The Master of Engineering in Clean Energy Engineering was the first of its kind in Canada and one of only a handful of Clean Energy programs worldwide. The revitalization of the program to the Master of Engineering Leadership in Clean Energy Engineering with the addition of the Platform courses will be unique and will compare to none as it provides an intense, in situ professionally focused education format.

The nearest known competitors to the M.E.L. C.E.E.N. are the Master of Engineering in Energy Systems Engineering - U Michigan (online), Master of Science in Energy Management - NYIT (2 years) and Master of Science in Renewable & Clean Energy - U Dayton (2 years). These programs are technically focused providing specialist training but without the broad engineering management platform content the M.E.L. C.E.E.N. program will include and are also of more condensed duration.

Figure 5 Assessment of Categories of Professional Engineering Master’s Programs

2.7.3. Level of support and recognition from other post-secondary institutions

As a new program, support and recognition from other post-secondary institutions is
limited. However, it is anticipated that participation from faculty members outside of UBC delivering content in the program will promote further support from institutions that offer similar programs both nationally and internationally. Given UBC’s history of expertise in the Pillar areas and the fact that UBC’s engineering programs have been ranked second in the nation and among the top 50 worldwide (*Times Higher Education*), it is expected that other post-secondary institutions both in Canada and abroad will recognize and support this program.

### 2.8. Demand for Program

The demand for professionals with technical and integrated professional skills is growing rapidly, and Canada currently has neither the trained personnel required to meet the needs, nor the means of training them. There are currently no other Canadian institution that offer sector-focused (rather than research-oriented) training at the graduate level with the proposed Platform and Pillar structure.

The demand for the suite of APSC Professional Master’s Programs comes from multiple sides. British Columbia and Canada need the proposed program for the success of the provincial and federal Pillar industries to stay competitive with international markets. Given UBC’s location, the research of current faculty, and the recent achievements of UBC undergraduate students in the Pillar areas, it is appropriate that UBC be the institution to implement a graduate-level program that are lacking in Canada and are now more important than ever.

The currently offered Master of Engineering in Clean Energy Engineering (M.Eng. C.E.E.N.) was initiated in September 2009 by UBC’s Clean Energy Research Centre. This unique, interdisciplinary graduate program was developed with generous support and in collaboration with industrial partners such as BC Hydro and FortisBC, who recognized the importance and the opportunity to establish such program in BC. Over the last five years the program has grown to a steady intake of 30 excellent students annually, and in 2014 has reached a significant milestone of 100 alumni. The Clean Energy Engineering program has gained reputation and it is now internationally recognized by its unique approach to a variety of topics related to clean energy from energy generation technologies to energy distribution, management, conservation, environmental impact and energy policy.

The inclusion of the M.E.L. Clean Energy Engineering program in the suite of new APSC Professional Master’s Programs is a logical step forward. Offering the C.E.E.N specialization as a Pillar under the M.E.L. credential (rather than the current M.Eng.) will allow the program to benefit greatly from the new Platform courses, from the strong leadership and academic excellence of host departments, while at the same time keeping its uniqueness and quality as the top clean energy program in Canada with a strong link to the Clean Energy Research Centre. The new program will be hosted by the Departments of Chemical and Biological Engineering and Mechanical Engineering. It will be offered to qualified engineering and selected science graduates seeking to acquire advanced training in engineering science, management and organizational behavior, and leadership for the practice of engineering and organizational leadership in the broad area of clean energy. The program is designed to be completed in one calendar year (Jan.-Dec.).
The Clean Energy Program will provide students with advanced knowledge in various aspects of energy conversion, distribution, storage and management, including renewable energy technologies, energy distribution networks and energy policy. It is designed to educate and challenge students to critical thinking about topics related to energy conservation and efficiency, energy and environment, and social impact. A modern curriculum is based on innovative teaching strategies which include a key feature of organizing and promoting interaction between students and industrial partners through seminars, debates on advanced energy related topics, industrially sponsored projects and conferences.

2.8.1. Enrolment Predictions and Capacity

Significant demand is anticipated for the new program. The desirability of an educational experience that can lead to rapid career progress upon graduation is reflected in the interest we have seen in the two existing professional master’s programs that have the most in common with the design of the proposed programs: The M.Eng. in Naval Architecture and Marine Engineering and the M.Eng. in Clean Energy Engineering.

The existing program M.Eng. C.E.E.N. has reached a steady state intake of 30 students and it is anticipated that the M.E.L. C.E.E.N. will attract more qualified applicants. To maintain a vibrant learning environment and admit the best and brightest applicants, the cohort size will be purposely limited to 40 by 2020. The program will not impact the enrolment of existing professional master’s programs such as the M.Eng. CHBE which attracts students who have obtained less than three years of relevant work experience since they finished their bachelor’s program and has different admission requirements.

2.8.2. Tuition Rationale

The program falls under the APSC “Guidelines for Professional Programs” (August 31, 2012) which stipulates that new professional programs in the Faculty, as of January 2009, must generate revenue to cover a range of expenses including equipment, facilities and salaries of faculty and staff involved in course delivery and administration. The primary source of revenue for these programs is through the tuition flow-back from the University to the Faculty and unit delivering the program.

The starting tuition level requested for the program is $27,000 CAD for the one-year program for Canadian citizens and Permanent Residents and $46,000 CAD for the one-year program for international students requiring a Study Permit. Tuition is paid in three equal installments per year, normally in January, May and September. The student is required to pay a minimum of three installments of tuition in order to graduate, but if the program is extended by permission of the program Director, the student pays tuition installments until the program requirements are met. For domestic students, the continuing fee and the extension fee are set by the University. No part-time studies are allowed. Currently, tuition increases by 2% each year.
We are confident that the program can attract students to pay the proposed tuition for the following reasons:

1. Vancouver is an acknowledged centre for the Pillar areas
2. A one-year program fits into the lifestyle framework for most of our potential students
3. The program will draw from an international pool of students
4. The tuition has been researched to be positioned in the lower cost bracket compared to programs at institutions such as MIT and Georgia Tech

Figure 6 Comparison of Tuition within Canada and the United States of America

2.8.3. Scholarships

We are concerned about getting the right students for the program and recognize that the tuition assessment may be prohibitive for some outstanding applicants. As a consequence, we intend to go to stakeholders in each sector seeking named scholarships. For example, with respect to prior commitment from major industrial partners, such as BC Hydro and Fortis BC, there may be a possibility to divert a portion of their contributions toward establishing scholarships. We have set aside 7.5% of the tuition revenue for financial need.

2.8.4. Potential Sectors of Employment for Graduates

Graduates of the program will have developed those skills and practices that stakeholders value most highly in experienced APSC professionals. They will be creative and visionary to see the potential to use the knowledge and training from the program effectively in their employment choices. Government and the private sector are hungry for experts to develop new processes and systems to explore and implement positive changes in their chosen area. Graduates can expect to find careers locally, nationally, and internationally.
2.8.5. Opportunities for Further Study

The professional master’s degree at UBC is generally not recommended for students who wish to continue on to a Ph.D., and the proposed program will conform to this. As such, it is anticipated that most or all of the graduating students will go on to or return to work in their chosen sector. It is possible, however, that a small number of students will continue to Ph.D.-level study at UBC or elsewhere.

3. Program Description and Specifications

3.1. Admission Requirements

Applicants must normally hold an undergraduate credential in engineering or a BSc in environmental science including a 2nd-year-level course in thermodynamics and have a minimum 3 years relevant experience in the energy sector. Please consult <insert web link> for additional details regarding the experience requirements.

The minimum admission requirement for students with degrees from North American institutions is an average of 76% (UBC-equivalency), calculated from senior-level coursework. An applicant with an average slightly less than 76% may be admitted if they have achieved 80% or higher in at least 12 credits (UBC-equivalency) of senior-level coursework in the prospective area of study.

The minimum admission requirement for applicants with degrees from outside North America is an overall degree average of 76% (UBC-equivalency).

Applicants from a university outside Canada in which English is not the primary language of instruction must present evidence of English language proficiency prior to being extended an offer of admission. Acceptable English language proficiency tests for the MEL CEEN are:

- TOEFL (Test of English as a Foreign Language): minimum score of 550 (paper version); 213 (computer version); 80 (Internet version, effective September 2005)
- IELTS (International English Language Testing Service): minimum overall band score of 6.5 with no other component score less than 6.0
- MELAB (Michigan English Language Assessment Battery): minimum overall score of 81
- PTE (Pearson Test of English - Academic): minimum overall score of 59
- CELPIP (Canadian English Language Proficiency Index Program): minimum scores; 4L/4L/4L
- CAEL (Canadian Academic English Language Assessment): minimum overall score of 60

Applicants who do not meet both the academic and English language proficiency requirements stated above, but who have had other significant formal training, relevant professional experience, and/or otherwise possess demonstrable knowledge or expertise
that would prepare them adequately for successful study in the graduate program, may be granted admission on the recommendation of the Program Director and the approval of the Dean of Applied Science.

Lists of the required application documents are available on the program website. The graduate program office in an area of Specialization is responsible for collection and assessment of application documents.

3.2. Program and Pillar Requirements

The M.E.L. C.E.E.N. program requires a minimum of 30 credits of coursework. The distribution will be 12 credits dedicated to the Platform providing the professional skills required for an experienced graduate to be an effective technical manager and 18 credits dedicated to the C.E.E.N. Pillar advanced technical courses. Both the Platform and the Pillar have prescribed core courses.

In general, where a program has a provision for elective choices, master’s programs in the Faculty will allow a maximum of 6 credits of 300- or 400-level undergraduate coursework and 6 credits of 500-level directed studies. The program does not allow for free electives. The program will be delivered as an intensive one-year program. It is anticipated that this will be favorable to post-professional students already in the workplace. The program courses will involve a combination of classroom learning and integrated hands-on training.

There are proposed seven Pillars leading to the degree of Master of Engineering Leadership at the UBC Vancouver Campus (see Appendix 5 for prospective curriculum). Utilizing the Platform will also be the Master of Health Leadership and Policy in Seniors Care at the UBC Vancouver Campus. These programs are distinct and each will be reviewed separately, but as all APSC Professional Programs are conceptualized as sharing a common goal of graduating students with enhanced disciplinary knowledge and business skills the proposed array of programs is listed in Appendix 5 for information only.
3.3. Platform Structure utilized by the M.E.L. C.E.E.N. Program

3.3.1. Leadership & Sustainability (4.5 credits total)

APPP 501 (1.5) Project Management and Leadership
APPP 502 (1.5) Sustainability and Leadership
APPP 503 (1.5) Organizational Leadership

Learning Outcomes
1. Lead multi-disciplinary teams to effectively deliver sustainable projects
2. Articulate ideas, progress and outcomes though oral and written communications
3. Plan and deliver multidisciplinary projects
4. Identify and apply sustainability concepts to influence the triple bottom-line
5. Apply leadership principles to organizational and social change

Content
1. Project management
2. Organizational behaviour and structure
3. Sustainability, ethics and policy
4. Personal and professional leadership effectiveness and communications
5. Application of concepts to trans-disciplinary challenges in organizational and social change
6. Fully integrated into technical streams through sector-relevant projects

3.3.2. Business Foundations (3 credits)

APPP 504 (3) Business Acumen for Technical Leaders

Learning Outcomes
1. Gain broad knowledge of the structure and mechanics of business.
2. How to use data for decision-making
3. Articulate ideas, progress and outcomes though oral and written communication
4. Practical level of understanding in specific aspects of managerial accounting, strategy and performance, market evaluation, operations management, negotiations and contract management and business-case building and valuation

Content
1. Managerial accounting
2. Strategy and performance
3. Market evaluation
4. Operations management
5. Negotiations and contract management
6. Business-case building and evaluation
7. Communication skills

3.3.3. Faculty of Commerce and Business Administration Electives (Select 1.5 credits total)

Learning Outcomes
1. Gain exposure to non-technical issues and skills that impacts business and management

Content (examples of Faculty of Commerce and Business Administration electives, credit values range from 0.7-1.5)
1. BAEN 542 (0.8) Prototyping
2. BAEN 543 (0.7) Disruption
3. BAEN 544 (0.8) Pitching Your Idea
4. BAEN 545 (0.7) Qualitative Models
5. BAEN 546 (0.8) Social Entrepreneurship
6. BAEN 547 (0.7) Innovation and Sustainability
7. BAFI 540 (0.8) Finance
8. BAMA 540 (0.8) Marketing Fundamentals
9. BAMA 541 (0.8) Product Service Management
10. BASC 540 (0.7) Operations Fundamentals
11. BAEN 550 (1.5) Fundamentals in Entrepreneurship
12. BAPA 501 (1.5) Government and Business
13. BAPA 510 (1.5) Public Policy and the Environment
14. BASD 501 (1.5) Corporate Social Responsibility
15. BASD 505 (1.5) Environmental Economics, Management, and Technology
16. BASM 501 (1.5) Business Strategy
17. BAHR 505 (1.5) Leadership
18. BAHR 507 (1.5) Two-Party Negotiations

3.3.4. Analytics and Interpretation for Applied Sciences APPP 505 (3 credits)

Determined by each Pillar and will be used as part of the M.E.L. C.E.E.N..

**Learning Outcomes**
1. Ensure competency to perform sector-relevant, deep analytical tasks
2. Recognize data visualization tools and understand how they were created
3. Develop a conceptual understanding of ‘big data’ and predictive analytics for applications in practice
4. Acquire strategies to build a corporate culture around analytics
5. Recognize potential ethics or privacy issues related to data collection or use

3.3.5. Project or Capstone APPP 506 (3 credits)

Determined by each Pillar and will be used as part of the M.E.L. C.E.E.N..

**Learning Outcomes**
1. Identify a critical dependability requirement in a complex project
2. Design, document, present and implement a solution to a significant open-ended problem related to the Pillar
3. Function effectively in teams

3.3.6. Professional Development

Provide support to candidates who wish to broaden their knowledge
1. Communication Assessment & Support
2. Integrated Sector-specific Experience (Graduate Co-operative Education Program)
3. Employer or Mandatory Sector-specific Project
4. e@UBC Lean Launchpad
5. MITACS Step Business Skills
6. APSC Toastmasters
7. Continuing Studies (PM)
8. APSC Professional Development Workshops
9. English Language Proficiency & Support
10. Data Visualization (VIVA)
11. International Student Support
12. Professional Development Employment Centre (PDEC)
3.4 Overview of Pillar for M.E.L. C.E.E.N. Program

**Value Chain**

- **Energy generation**
- **Transmission & distribution**
- **Energy utilization & management**

**Learning Outcomes**

1. Comprehensive technical and practical understanding of conventional thermal systems and alternative energy technologies.
2. Understanding of energy storage and transportation in terms of both technology and optimization
3. Comprehensive technical and operational understanding of Strategic Energy Management
4. Comprehensive understanding of the impact of various energy systems on the ecosystems and environment, and potential routes to reducing pollution and developing sustainable clean energy systems.
5. Understanding of the social and political dimension of energy efficiency and conservation, energy policy and economics.

<table>
<thead>
<tr>
<th>Winter Session – Term 2 (January – April)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 501</td>
<td>3</td>
</tr>
<tr>
<td>CEEN 503</td>
<td>2</td>
</tr>
<tr>
<td>CEEN 523</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Credits</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>APPP 501</td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 502</td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 505</td>
<td>3</td>
</tr>
</tbody>
</table>

**Summer Session – Term 1 (May – June); Term 2 (July – August)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPP 503</td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 504</td>
<td>3</td>
</tr>
<tr>
<td>APSC 412 (co-op placement) or an entrepreneurial experience</td>
<td>6*</td>
</tr>
</tbody>
</table>

**Winter Session – Term 1 (September – December)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEEN 504</td>
<td>2</td>
</tr>
<tr>
<td>CEEN 550</td>
<td>3</td>
</tr>
<tr>
<td>CEEN 525</td>
<td>2</td>
</tr>
<tr>
<td>APPP 506</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives (Faculty of Commerce and Business Administration – current list of approved electives on M.E.L. C.E.E.N. website) | 1.5 |

**TOTAL CREDITS** | **30***

No free electives.

*Note: APSC 412 has a credit value of 6. Students choosing this option should note that these credits are non-additive, meaning they are not counted toward the 30 required program credits. The entrepreneurial experience options also do not have credits that count toward the required program credits.

Figure 9 Course Credit Distribution

MASTER OF ENGINEERING LEADERSHIP IN CLEAN ENERGY ENGINEERING
3.5. Supervision and Evaluation

Unlike the graduate-level research programs at UBC, a student in the M.E.L. C.E.E.N. program will not be assigned a single, dedicated supervisor, but will rather be supervised day-to-day in their work by the Pillar Associate Director and Senior Instructor Vladan Prodanovic and the APSC Professional Program Office. Coursework is evaluated through mini-projects, exams, homework assignments and in-class quizzes. For Pillars having a capstone project as a core component, supervision and evaluation will be provided by a professor and by sector-specific adjuncts, while a Co-operative Education placement will be supervised mainly by the sponsoring company, and given a final mark by a UBC faculty member involved in the professional program based on the company’s report and the student’s final report and presentation. Expectations of students will be formalized through individual course syllabi.

The Program. This is a non-thesis interdisciplinary graduate program offered by the Departments of Chemical and Biological Engineering and Mechanical Engineering. The program is offered to qualified engineering and selected science graduates seeking to acquire advanced training in engineering science, management and organizational behavior, and leadership for the practice of engineering and organizational leadership in the broad area of Clean Energy. The program is designed to be completed in one calendar year (Jan-Dec).

The objective of the Clean Energy Program is to provide students with advanced knowledge in various aspects of energy conversion, distribution, storage and management, including renewable energy technologies, energy distribution networks and energy policy. A modern curriculum is based on innovative teaching strategies which include a key feature of organizing and promoting interaction between students and industrial partners through seminars, debates on advanced energy related topics, industrially sponsored projects and conferences. Program courses (30 credits total) can roughly be clustered in two groups.

The first group corresponds to technical pillar courses which include a comprehensive review of thermal energy systems, sustainable technologies, storage and transport of energy, conservation and energy efficiency analysis, as well as energy and environment and energy policy. The second group consists of platform courses that are mainly focused on leadership and project management skills. These platform courses are common for a number of professional Master of Engineering programs across the Applied Science curriculum. The C.E.E.N. program also includes a possibility of a 12-week Co-op experience for interested students.

Program Director. The program will be administered by a Program Director, Walter Merida and Associate Director, Vladan Prodanovic who are appointed by the Heads of CHBE and MECH. The Program Director and Associate Director will be UBC faculty members. Their duty will be to administer the program in accordance with the academic policies of the University and the objectives set forth in this document. The C.E.E.N. program will remain under the Clean Energy Research Centre’s brand, and necessary steps will be implemented to ensure that the Centre’s director has the authority to make the C.E.E.N. and CERC’s activities consistent.
The Program Director will serve as the liaison with the participating departments and the Faculty of APSC on matters related to the (academic, financial and staff support aspects of the) program. Also, the Program Director will prepare annual budget proposals to the Department Heads and will manage the operational budget for the Program (a portion of the professional program’s revenue sharing necessary to run the program at acceptable level of excellence, and mutually agreed upon by participating Department Heads and Program Director) Specific administrative responsibilities of the Director also include:

- Report to the Department Heads
- Budget administration and signing authority on an operational budget (separate from the fixed costs associated with personnel.)
- Report to and chair the Advisory Committee
- Report to and Chair the Board of Study
- Promote and advance the C.E.E.N. program through professional network activities
- Lead the student internationalization efforts

Program Associate Director for student matter and curriculum. The role of the Associate Director is to assist the Program Director in academic and curriculum related activities, student matters and maintenance of the professional network. The Associate Director reports to the Program Director. Specific responsibilities include:

- Evaluate the applications for admission to the program;
- Welcome/orient the students and assist in student registration;
- Advise the students (regularly communicate deadlines and University procedures to the students, handle requests such as leaves, extensions of the duration of the program and forward these to the Faculty, review the academic progress of student; check graduation lists, be the contact person for students if there are problems as well as offer information and advice);
- Coordinate student projects (maintain a professional network with industrial partners interested in project collaboration or in mentoring the projects, manage the list of available projects, organize project delivery, reporting and presentations and assign project grades);
- Assist in preparation of student candidate's files for scholarships, such as the annual Paprican Scholarship competition;
- In coordination with the Program Director selects guest lecturers; organize seminars, organize field trips and visits to industry; select and appoint teaching assistants if needed
- Respond to inquiries and promote the program e.g. special events, preparation of brochures and posters and presentations required for the advertising of the program to recruit exceptionally qualified applicants

Board of Study. To assist and advise the Program Director, the Board of Study will be established among the teaching staff of the Program representing the participating Engineering Departments. This Board will assist in establishing the curriculum, evaluating courses, and recommending changes when necessary. The Program Director will chair this board. The other members could be:

- The Associate Director of C.E.E.N.
• Two UBC Faculty members appointed by the Heads of the two participating Departments
• One student representative, elected by the students enrolled in the program

Advisory Committee To assist in periodic reviews of the curriculum and providing the necessary industry feedback. The members would be:
• The Program Director and Associate Director
• Three members from the pool of industrial partners

Support Staff
To assist the Program Director and Associate Director the Program requires the following support:

1. A full-time graduate secretary to assist with graduate secretary duties as listed below:
   • Coordination of all aspects of program admissions (communication with potential applicants, assessment of applications for completeness and eligibility, participation in the selection process, etc…)
   • Registration, course scheduling and timetabling, examination times
   • Maintenance of program databases (applicant and student profiles, alumni database, job placements, project database, professional networks, etc…)
   • Student advising and general communication with students through contact during office hours, email, website and social media. Dissemination of news and event information.
   • Management of C.E.E.N. website
   • Assistance with event planning and coordination of workshops and seminars
   • Assistance with program marketing and recruitment strategies

2. Part-time support for financial student matter and other transactions

3.6. Policies on Program Management and Assessment

The program will be administered under APSC. In delivering this new responsive model program it is essential that the Dean’s Office, APSC Professional Program Office and Graduate Program Offices responsible for the Pillars collaborate and cooperate in an intimate fashion. The student should have access to all services and needs from within the same Faculty to ensure timely and comprehensive service of their academic and non-academic activities.

In parallel to internal reviews used to evaluate professional degrees conducted according to the APSC and UBC governance guidelines, the program will be evaluated and developed based on the recommendations of an Advisory Committee. This expert panel of outside professionals and academics will meet once per term. Committee membership will be approved by the Dean of APSC.
4. Calendar Statements
[Removed from this document and attached separately for purposes of Curriculum.]

5. Program Resources

5.1. Program Funding and Budget

The program will be delivered as fiscally sustainable. Tuition is $27,000 per year for domestic students and $46,000 per year for international students. The existing program M.Eng C.E.E.N. has reached a steady state intake of 30 students and it is anticipated that the M.E.L. C.E.E.N. will attract more qualified applicants. To maintain a vibrant learning environment and admit the best and brightest applicants, however, the cohort size will be purposely limited to 40 by 2020. The program will not impact the enrolment of existing professional master’s programs such as the M.Eng Chemical and Biological Engineering which attracts students who have obtained less than three years of relevant work experience since they finished their bachelor’s program and has different admission requirements.

5.2. Qualified Faculty

Courses will be taught by a combination of faculty from all departments and schools in APSC and also from other faculties at UBC; Visiting Professors, sector-specific adjuncts and guest lecturers will be involved.

5.3. Pillar Champions or Directors

Each Pillar has a ‘Champion’, or in some cases more than one champion, who was instrumental in establishing the value proposition for the Pillar and also in the design of the curriculum. It is expected that these individuals will continue to have an instrumental role in the administration and oversight of the Pillar upon program launch, and may become Program Directors (see 5.5).

5.4. Library Resources

The new courses for this program have been reviewed by the library. The Pillar courses will not require any additional Library support and the Platform courses requiring new resources will be funded by the APSC Dean’s Office. (see Appendix 2 and 3 and Appendix 7 Platform Proposal)

5.5. Administration

- Program Directors

The Directors for each Pillar will be appointed by the Dean of APSC on the recommendation of the Heads of CHBE and MECH. The Director will lead the implementation of the program and oversee its evolution, growth and position within APSC. As well as assuming teaching and research commitments, the program Director will
represent the program on university committees. The program Director will also be expected to lead the community outreach component of the program to secure internship opportunities. The Director will take an active role in developing the necessary community and stakeholder linkages to establish a long-term and wide range of internship placements. The Director will become the principal point of contact for community and stakeholder partners. The Director will report to the Head of the lead department or school as appointed by the Dean of APSC.

- **Program Manager**
  It is expected that the suite of professional programs will be managed on a day-to-day basis by one or more centrally located program managers. This program manager would assist in: student recruitment, student enquiries, website development and maintenance, applications and admissions, timetabling, classroom scheduling, extra-curricular events and workshops, and addressing registration inquiries or issues. Support for admissions and records will also be provided by the APSC Dean’s Office.

5.6. **Space Requirements**

Dedicated space for APSC Professional Programs is being developed within a new building to be completed in 2016. UBC has swing space available which will be used as interim accommodation until new facilities are ready.

5.7. **Consultations with University Units**

Consultation requests were sent to the following (see Appendix 4):

1. Faculty of Applied Science, School of Regional & Community Planning (2 responses)
2. Faculty of Commerce and Business Administration
3. Faculty of Forestry
4. Faculty of Land and Food Systems
5. Faculty of Science
6. UBC Sustainability Initiative

5.8. **Contact Information**

**Contact Person:**
University of British Columbia, Faculty of Applied Science, Dean’s Office
Elizabeth Croft, Associate Dean, Education & Professional Development
elizabeth.croft@ubc.ca 604-822-6614

6 **Appendices Accompanying Pillar Proposals**

[Removed for purposes of Curriculum; may be requested.]
UBC Curriculum Proposal Form

Category: (1)

**Faculty:** Faculty of Applied Science (APSC)  
**Faculty Approval Date:** December 5, 2014  
**Effective Session:** Winter, Term 2  
**Year:** 2015-2016

**Date:** December 19, 2014  
**Contact Person(s):** Faculty of Applied Science Dean’s Office  
**Deborah Feduik** (Manager, M.Eng & Graduate Programs)  
Tel: 604-822-8386  
Email: gradprog@apsc.ubc.ca

**URL:**  
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,195,0,0

**Proposed Calendar Entry:**

**Master of Engineering Leadership in Clean Energy Engineering (M.E.L. in C.E.E.N.)**

**Program Overview**

Master of Engineering Leadership in Clean Energy Engineering (M.E.L. in C.E.E.N.) is a program within the Faculty of Applied Science.

The objective of the Clean Energy Program is to provide students with advanced knowledge in various aspects of energy conversion, distribution, storage and management, including renewable energy technologies, energy distribution networks and energy policy. It is designed to educate and challenge students to critical thinking about topics related to energy conservation and efficiency, energy and environment, and social impact. The curriculum is based on innovative teaching strategies which include a key feature of organizing and promoting interaction between students and industrial partners through seminars, debates on advanced energy related topics, industrially sponsored projects and conferences.

The M.Eng. C.E.E.N. program, started in 2009, will be replaced by this new program and curriculum. Students currently enrolled in the existing program will matriculate with the present calendar entry: N/A

**Present Calendar Entry:** N/A

**Type of Action:** Create new program

**Rationale:**

The creation of this program has been driven, in part, by strong interest from the external community (whereby British Columbia will see a high level of activity over the next few decades), in part by a desire to collaborate between the Departments and Schools in the Faculty of Applied Science and in part to raise UBC’s profile and to attract students (both within Canada and abroad), and to collaborate internationally.

The objective of the Clean Energy Program is to provide students with advanced knowledge in various aspects of energy conversion, distribution, storage and management, including renewable energy technologies, energy distribution networks and energy policy. It is designed to educate and challenge students to critical thinking about topics related to energy conservation and efficiency, energy and environment, and social impact. A modern curriculum is based on innovative teaching strategies which include a key feature of organizing and promoting interaction...
original curriculum program requirements and the degree designation of M.Eng. C.E.E.N..

<table>
<thead>
<tr>
<th>Admission Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicants must normally hold an undergraduate credential in engineering or a BSc in environmental science including a 2nd-year-level course in thermodynamics and have a minimum 3 years relevant experience in the energy sector. Please consult <a href="#">insert web link</a> for additional details regarding the experience requirements.</td>
</tr>
</tbody>
</table>

The minimum admission requirement for students with degrees from North American institutions is an average of 76% (UBC-equivalency), calculated from senior-level coursework. An applicant with an average slightly less than 76% may be admitted if they have achieved 80% or higher in at least 12 credits (UBC-equivalency) of senior-level coursework in the prospective area of study.

The minimum admission requirement for applicants with degrees from outside North America is an overall degree average of 76% (UBC-equivalency).

Applicants from a university outside Canada in which English is not the primary language of instruction must present evidence of English language proficiency prior to being extended an offer of admission. Acceptable English language proficiency tests for the MEL CEEN are:

- TOEFL (Test of English as a Foreign Language): minimum score of 550 (paper version); 213 (computer version); 80 (Internet version, effective September 2005)
- IELTS (International English Language Testing Service): minimum overall band score of 6.5 with no other component score less than 6.0
- MELAB (Michigan English Language Assessment Battery): minimum overall score of 81
- PTE (Pearson Test of English - Academic): minimum overall score of 59
- CELPIP (Canadian English Language Proficiency Index Program): minimum scores; 4L/4L/4L
- CAEL (Canadian Academic English Language Assessment): minimum overall score of 60

Applicants who do not meet both the academic and English language proficiency requirements stated above, but who have had other significant formal training, relevant professional experience, and/or otherwise possess demonstrable knowledge or expertise that would prepare them adequately for successful study in the graduate program, may be granted admission on the recommendation of the Program Director and the approval of the Dean of Applied Science.

Lists of the required application documents are available on the program website. The graduate program office in an area of Specialization is responsible for collection and assessment of application documents.

**Transfer Credit**

1. Graduate students who have earned credits outside their current master's program (e.g., from a different university, in a different UBC master's program, as an undergraduate, or as an unclassified student) may transfer up to 12 credits or up to 40% of the total number of credits needed for completion of their current program (whichever is more), provided that:

   - the courses were not used to satisfy the requirements of another credential;
   - the courses were not used as a basis for admission to the graduate degree
program;
- at least a B standing (UBC 74%) was obtained in courses considered for transfer;
- the courses considered for transfer credit have been taken within five years of commencement of the current degree program.

2. No more than 6 credits of transfer credit may be at the undergraduate level (300-/400-level).

3. The 12-credit (40%) restriction applies to students in UBC-approved Exchange Agreements established by the UBC Go Global Office.

4. Requests for transfer credit must be accompanied by a letter from the home graduate program addressed to the Dean of the Applied Science. The letter must provide an academic justification for allowing the transfer credit on a course by course basis.

Courses taken as a UBC Access Studies (or non-degree) student may be approved for transfer toward a graduate program (in accordance with transfer credit regulations specified above) with the permission of the graduate program and the Dean of Applied Science.

Program Requirements

Degree completion requires completion of 30 credits. This includes 18 credits of Pillar courses and 12 credits of Platform courses, including 1.5 credits of approved electives from the Faculty of Commerce and Business Administration, and a 3-credit Capstone course. Platform refers to foundational coursework focused on the professional skills required for an experienced graduate to be an effective professional leader. These courses are common across many of the Applied Science Professional Master’s programs. The Pillar
contains the relevant technical material and is equivalent to a specialization. Each student's coursework must be approved by the Applied Science graduate program office. Students in the M.E.L. C.E.E.N. will choose in their second term between a Co-operative Education Placement (APSC 412 non-additive credits not counted in the 30 credits program requirement) and an entrepreneurial experience. A complete list of the courses required for successful completion are available on the program website [www.cerc.ubc.ca](http://www.cerc.ubc.ca).

**Financial Assistance**

Financial assistance based on academic merit and financial need may be available.

Students should consult the M.E.L. C.E.E.N. program website for more information.

**Contact Information**

Faculty of Applied Science  
Dean’s Office  
5000-2332 Main Mall  
Vancouver, BC V6T 1Z4  
Email: [ceen@cerc.ubc.ca](mailto:ceen@cerc.ubc.ca)  
[www.cerc.ubc.ca](http://www.cerc.ubc.ca)

<table>
<thead>
<tr>
<th>Faculty:</th>
<th>Applied Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department:</td>
<td>Chemical &amp; Biological Engineering, Mechanical Engineering</td>
</tr>
<tr>
<td>Faculty Approval Date:</td>
<td>Dec. 5, 2014</td>
</tr>
<tr>
<td>Effective Session (W or S):</td>
<td>W</td>
</tr>
<tr>
<td>Effective Academic Year:</td>
<td>2015-2016</td>
</tr>
<tr>
<td>Date:</td>
<td>December 3, 2014</td>
</tr>
<tr>
<td>Contact Person:</td>
<td>Vladan Prodanovic</td>
</tr>
<tr>
<td>Phone:</td>
<td>604.827.4239</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:vladan.prodanovic@ubc.ca">vladan.prodanovic@ubc.ca</a></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th>Present Calendar Entry:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CEEN 501 (3) Energy System Fundamentals</strong></td>
<td><strong>CEEN 501 (3) Thermal Energy Systems</strong></td>
</tr>
<tr>
<td>Thermodynamic analysis of energy conversion processes, power cycles and refrigeration cycles. Exergy analysis of conventional energy systems. Thermal conversion technologies. Prerequisite: 3 credits of thermodynamics at the second- or third-year level.</td>
<td>Thermodynamics of fossil and biomass fuel usage, exergy analysis of industrial processes. Fuel usage technologies: combustion, power cycles, gasification, pyrolysis, and reforming. Nuclear energy. Control of emissions of acid gases, VOCs, particles, and carbon dioxide. Energy supply issues and policy. This course is not</td>
</tr>
</tbody>
</table>

---

*Vancouver Senate*  
Docket Page 120 of 275
<table>
<thead>
<tr>
<th>Faculty:</th>
<th>Applied Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department:</td>
<td>Chemical &amp; Biological Engineering, Mechanical Engineering</td>
</tr>
<tr>
<td>Faculty Approval Date:</td>
<td>Dec. 5, 2014</td>
</tr>
<tr>
<td>Effective Session (W or S):</td>
<td>W</td>
</tr>
<tr>
<td>Effective Academic Year:</td>
<td>2015-2016</td>
</tr>
<tr>
<td>Date:</td>
<td>December 3, 2014</td>
</tr>
<tr>
<td>Contact Person:</td>
<td>Vladan Prodanovic</td>
</tr>
<tr>
<td>Phone:</td>
<td>604.827.4239</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:vladan.prodanovic@ubc.ca">vladan.prodanovic@ubc.ca</a></td>
</tr>
</tbody>
</table>

This course is not eligible for Credit/D/Fail grading.

eligible for Credit/D/Fail grading. Prerequisite: 3 credits of thermodynamics at the second- or third-year level.

**Type of Action:** Change title and description.

**Rationale for Proposed Change:**
The existing Master of Engineering in Clean Energy Engineering (M.Eng C.E.E.N.) is being developed into the model for the new APSC Master of Engineering Leadership (M.E.L.). This is a core course (technical pillar) in the new M.E.L. in Clean Energy Engineering program.
The course will continue to focus on the thermodynamic analysis of energy conversion processes, power cycles and refrigeration cycles, exergy analysis of conventional energy systems and thermal conversion technologies. Topic such as “nuclear energy”, “control of gas and particle emissions”, or “Energy supply issues and policy” are covered elsewhere in the program (for example nuclear energy will be taught in CEEN 503, energy supply issues and policy in CEEN525) and they are therefore removed from the description of this course, and course content, making space for more case studies related to second law analysis of thermal systems. The new title and description also reflects the broader range of processes and issues that are already being covered in the current CEEN 501 course content.

**Proposed Calendar Entry:**
CEEN 503 (2) Sustainable Energy Systems

**Present Calendar Entry:** None

**Type of Action:** Create new course
Planetary thermodynamics, energy system evolution, energy services, role of renewable energy sources. Alternative energy technologies. Solar, wind, small-scale hydro, tidal, geothermal, electrochemical (batteries, capacitors, and fuel cells), and biochemical energy, electromechanical conversion processes. Techno-economic assessment of alternative energy technologies. 
Co-requisite: CEEN 501. 
*This course is not eligible for Credit/D/Fail grading.*

**Rationale for Proposed Change:**
The existing Master of Engineering in Clean Energy Engineering (M.Eng C.E.E.N.) is being developed into the model for the new APSC Master of Engineering Leadership (M.E.L.). This is a core course (technical pillar) in the new M.E.L. in Clean Energy Engineering program. 

The existing CEEN 502, which is a 3 credit course, offers a broad content which includes energy generation using alternative technologies, energy storage and transmission. The new course structure requires that this content is split into 2 courses (CEEN 503 and CEEN 504) in such way that energy generation using alternative technologies is taught in CEEN 503, and energy storage and transmission in CEEN 504. It is suggested that both new courses will be 2 credits each, with the new CEEN 503 covering 2/3 of the existing CEEN 502 content, and with added content in CEEN 504 (thermal energy storage) for the additional credit. 

The course CEEN 502, which is a core course in the existing M.Eng C.E.E.N. Program, will be deleted after the students registered in the existing program complete their degree.

| Faculty: | Applied Science |
| Department: | Chemical & Biological Engineering, Mechanical Engineering |
| Faculty Approval Date: | Dec. 5, 2014 |
| Effective Session (W or S): | W term 2 |
| Effective Academic Year: | 2015-2016 |
| Date: | December 3, 2014 |
| Contact Person: | Vladan Prodanovic |
| Phone: | 604.827.4239 |
| Email: | vladan.prodanovic@ubc.ca |

**Proposed Calendar Entry:**

**CEEN 504 (2) Energy Storage and Transmission**

Analysis of energy systems from resource extraction to energy services. Storage and transport components of energy systems. System optimization including smart grid, transmission, and distribution design for electrical and thermal systems. Distributed

**Present Calendar Entry:** None

**Type of Action:** Create new course

**Rationale for Proposed Change:**
The existing Master of Engineering in Clean Energy Engineering (M.Eng C.E.E.N.) is being developed into the model for the new APSC Master of Engineering Leadership (M.E.L.). This is a
This course is not eligible for Credit/D/Fail grading.

Core course (technical pillar) in the new M.E.L. in Clean Energy Engineering program. This new course will cover the topics on energy storage and transmission, as previously covered in the existing CEEN 502, with added topics on heat, mechanical and thermal energy storage. The course CEEN 502, which is a core course in the existing M.Eng C.E.E.N. Program, will be deleted after the students registered in the existing program complete their degree.

<table>
<thead>
<tr>
<th>Faculty: Applied Science</th>
<th>Date: December 3, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Chemical &amp; Biological Engineering, Mechanical Engineering</td>
<td>Contact Person: Vladan Prodanovic</td>
</tr>
<tr>
<td>Faculty Approval Date: Dec. 5, 2014</td>
<td>Phone: 604.827.4239</td>
</tr>
<tr>
<td>Effective Session (W or S): W term 2</td>
<td>Email: <a href="mailto:vladan.prodanovic@ubc.ca">vladan.prodanovic@ubc.ca</a></td>
</tr>
<tr>
<td>Effective Academic Year: 2015-2016</td>
<td></td>
</tr>
</tbody>
</table>

### Proposed Calendar Entry:

**CEEN 523 (3) Energy and the Environment**


This course is not eligible for Credit/D/Fail grading.

### Present Calendar Entry:

**CEEN 523 (3) Energy and the Environment**

Energy/environment/society interactions; development of energy resources; energy demand and its determinants; policy dimension of energy and climate change; impacts on ecosystems; life cycle analysis; impact assessment and other tools for quantitative and qualitative evaluation of alternative energy sources; case studies. 

This course is not eligible for Credit/D/Fail grading.

Corequisite: CEEN 501.

### Type of Action:

Modify course description and delete co-requisite.

### Rationale for Proposed Change:

The existing Master of Engineering in Clean Energy Engineering (M.Eng C.E.E.N.) is being developed into the model for the new APSC Master of Engineering Leadership (M.E.L.). This is a core course (technical pillar) in the new M.E.L. in Clean Energy Engineering.

18 February 2015

Vancouver Senate

Docket Page 123 of 275
The course will continue to focus on the energy, environment and societal interactions, impact on ecosystems, climate change, and life cycle analysis, impact assessment as tools for evaluation of alternative energy sources. The original co-requisite of CEEN 501 has been determined as no longer necessary after delivering the course to multiple cohorts and allowing students outside of the M.Eng C.E.E.N. to take the course.

Faculty: Applied Science  
Department: Chemical & Biological Engineering, Mechanical Engineering  
Faculty Approval Date: Dec. 5, 2014  
Effective Session (W or S): W term 2  
Effective Academic Year: 2015-2016  
Date: December 3, 2014  
Contact Person: Vladan Prodanovic  
Phone: 604.827.4239  
Email: vladan.prodanovic@ubc.ca

Proposed Calendar Entry:  
CEEN 525 (2) Energy Policy  
Energy policy process and governance. Sustainable energy as a social and political challenge, formal government structures and process, actors in the policy, policy analysis, policy instrument, and energy planning and approval processes, including environmental assessment. Introduction to demand-side energy policy.  
*This course is not eligible for Credit/D/Fail grading.*

Present Calendar Entry: None  
Type of Action: Create new course

Rationale for Proposed Change:  
The existing Master of Engineering in Clean Energy Engineering (M.Eng C.E.E.N.) is being developed into the model for the new APSC Master of Engineering Leadership (M.E.L.). This is a core course (technical pillar) in the new M.E.L. in Clean Energy Engineering program. The content for this new course was previously delivered to C.E.E.N. students as part of CEEN 590A “Topics in Clean Energy Engineering – ENERGY POLICY”. In the feedback received from stakeholder partners it was emphasized that energy policy is such an important topic that is should be a standalone, core course in the C.E.E.N. program. As such, it is suggested to include this new course in the technical pillar. The course will address the energy policy process and governance. Geographically the most focus will be on British Columbia within the Canadian context, but there will also be material from other provinces, the
<table>
<thead>
<tr>
<th>Faculty:</th>
<th>Applied Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department:</td>
<td>Chemical &amp; Biological Engineering, Mechanical Engineering</td>
</tr>
<tr>
<td>Faculty Approval Date:</td>
<td>Dec 5, 2014</td>
</tr>
<tr>
<td>Effective Session (W or S):</td>
<td>W term 2</td>
</tr>
<tr>
<td>Effective Academic Year:</td>
<td>2015-2016</td>
</tr>
<tr>
<td>Date:</td>
<td>December 19, 2104</td>
</tr>
<tr>
<td>Contact Person:</td>
<td>Vladan Prodanovic</td>
</tr>
<tr>
<td>Phone:</td>
<td>604.827.4239</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:vladan.prodanovic@ubc.ca">vladan.prodanovic@ubc.ca</a></td>
</tr>
</tbody>
</table>

### Proposed Calendar Entry:

**CEEN 550 (3) Energy Efficiency and Conservation**

Engineering concepts of demand side management (DSM), energy auditing, analysis of buildings and industrial equipment, measurement & verification, and system data analysis. Energy efficient technologies for green buildings and industrial processes. Behavior and energy use. DSM policy concepts. *This course is not eligible for Credit/D/Fail grading.*

### Present Calendar Entry:

**CEEN 550 (3) Energy Efficiency and Conservation**

Engineering concepts and policy aspects of demand side management (DSM). *This course is not eligible for Credit/D/Fail grading.*

### Type of Action:

Change course description.

### Rationale for Proposed Change:

The existing Master of Engineering in Clean Energy Engineering (M.Eng C.E.E.N.) is being developed into the model for the new APSC Master of Engineering Leadership (M.E.L.). This is a core course (technical pillar) in the new M.E.L. in Clean Energy Engineering program.

The course will focus on the engineering concepts of demand side management (DSM) including energy auditing, analysis of buildings and industrial equipment. The new description expands on the concepts of DSM already being covered in the current course content. Previous course description was vague in terms of the course content.
18 February 2015

To: Vancouver Senate

From: Senate Curriculum & Admissions Committees

Re: Master of Engineering Leadership in Naval Architecture and Marine Engineering (approval)

The Senate Curriculum and Admissions Committees have reviewed the material forwarded to them by the Faculty of Applied Science and enclose those proposals they deem ready for approval.

The following is recommended to Senate:

**Motion:** “That the new Master of Engineering Leadership in Naval Architecture and Marine Engineering (M.E.L.N.A.M.E.) program be approved.”

Respectfully submitted,

Mrs. Carol Jaeger, Vice-Chair, Senate Curriculum Committee
Dr. Robert Sparks, Chair, Senate Admissions Committee
FACULTY OF APPLIED SCIENCE

New program

Master of Engineering Leadership in Naval Architecture and Marine Engineering
Memo

To: Paul Harrison, Chair, Senate Academic Policy Committee

From: David Farrar, Provost and Vice-President Academic

Date: January 15, 2015

Re: Administration of Master of Engineering Leadership Programs

The Dean of the Faculty of Applied Science has requested that the proposed new graduate professional programs be officially designated as professional programs and that they be administered by the Faculty of Applied Science rather than by the Faculty of Graduate and Postdoctoral Studies.

The proposed programs are:

- Master of Engineering Leadership in Advanced Materials Manufacturing
- Master of Engineering Leadership in Clean Energy Engineering
- Master of Engineering Leadership in Dependable Software Systems
- Master of Engineering Leadership in Green Bio-Products
- Master of Engineering Leadership in Integrated Water Management
- Master of Engineering Leadership in Naval Architecture and Marine Engineering
- Master of Engineering Leadership in Urban Systems
- Master of Health Leadership in Seniors Care

1. I am satisfied that these programs meet the criteria for designation as professional graduate programs.

2. For the reasons outlined below, I support these programs being administered by the Faculty of Applied Science

   a) All criteria laid out "Optional Transfer of Professional Graduate Programs from the Faculty of Graduate and Postdoctoral Studies to the Disciplinary Faculties" document, approved by Senate in January of 2005, have been met

   b) The Faculty of Applied Science has been successfully handling the administration of the Master of Engineering programs for nearly a decade. In that time, the Faculty of Applied Science gained considerable experience in effective graduate program administration. There is a healthy and productive relationship between the Faculty of Graduate and Postdoctoral Studies and Applied Science which all expect to continue.

   c) The Faculty of Applied Science has the resources, including staff and financial resources, to provide the suite of services the Faculty of Graduate and Postdoctoral Studies provides for most graduate programs including financial support for students, student appeals, and matters relating to admissions and compliance with requirements for degree completion.
d) This does not set a precedent. Decisions about the administration of future new graduate professional programs will be made in accordance with the guidelines approved by Senate in January, 2005.

e) I have consulted with Vice-Provost and Dean, Graduate and Postdoctoral Studies, Dr. Susan Porter. She agrees to this request because the M.Eng. Programs are already administered by the Faculty of Applied Science, and the Masters of Engineering Leadership are closely related to the M.Eng. programs.
Overview
The University of British Columbia is a comprehensive research-intensive university, consistently ranked among the 40 best universities in the world. It creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world. Since 1915, UBC’s West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning. The program strives to provide students with a comprehensive and innovative education that enables them to build on their past work experience and technical skills, adding leadership and interdisciplinary opportunities for learning and interaction with other students. Consultation with stakeholders has revealed that experienced engineers and early-career professionals in the chosen focus areas require sector-relevant, cross-disciplinary technical skills. They also require project management, communication and business skills to be effective leaders.

The Master of Engineering Leadership in Naval Architecture and Marine Engineering will provide students with a comprehensive and innovative education that will enable them to advance their career in a path that is distinct from the traditional, purely technical, course-based master’s, the research based master’s or the Master of Business Administration (M.B.A.). The program will combine an essential understanding of the engineering science and physics of ship design, coupled with the broad business training contained in the program’s platform courses. The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses.

Credential
The credential awarded will be the Master of Engineering Leadership in Naval Architecture and Marine Engineering (M.E.L. N.A.M.E.). The degree will be a master’s degree with a balance between advanced engineering theories, interdisciplinary knowledge and real-world applications. The field of study will be advanced engineering technology and techniques for naval architecture and marine engineering applications.

Location
The Vancouver Campus of UBC is the main location for classroom education and administration. Course instruction and assignments will be achieved through collaborations among UBC, provincial and federal agencies and local private sector stakeholders involved in naval architecture and marine engineering research and development.
Faculty Offering Program
The program will be offered formally, administered and delivered by the Faculty of Applied Science, UBC.

Program Start Date
The program will be offered in the 2015/2016 academic year, beginning in January 2016.

Program Completion Time
Anticipated time for completion of the program is 1 year of full-time academic study, including any work-term placements and non-academic activities.

Objectives of the Proposed Program
The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses. Some large corporations and government activities within the field find themselves deploying skilled business personnel to lead engineering teams. Often this results in a “communications gap” between managers and technical staff thus impairing team effectiveness. The M.E.L. N.A.M.E. program will create Program Managers who are peers to their engineering team members, but whereas those team members may bring specialist skills in an engineering discipline, the graduate of this program will have specialist skills in program management. The program will:

• Equip tomorrow’s professionals with the critical thinking and practical skills necessary to make important contributions to their chosen sector and to make Canada a leader in the global market.
• Capitalize on Vancouver’s industrially diverse environment and UBC’s current stakeholder connections by offering an attractive hands-on education that allows students to get valuable work experience; and allows BC’s companies to benefit from the minds of UBC’s top graduate-level students.
• Link the concerns of extra-university partners by offering students a project-based curriculum that explores cutting edge concepts in collaboration with sector professionals in the Vancouver region.
• Emerge as the leading institution for the continuing education of current leaders in the advanced material manufacturing sector and for the training of tomorrow’s leaders.
• Graduate highly skilled professionals who can fill the jobs gap currently existing and expected to increase in Canada in the foreseeable future.
• Continue to develop a high profile faculty with international expertise in the theory and practice of advanced materials manufacturing.

Program Learning Outcomes
The M.E.L. N.A.M.E. will enable students to build on their past work experience and technical skills, adding leadership and interdisciplinary opportunities for learning and interaction with other students. The learning outcomes of the M.E.L. N.A.M.E. program are to:

1. Provide understanding of the ship’s interaction with the water, in the fields of hydrostatics, hydrodynamics, and ship dynamics
2. Provide understanding of the ship’s structural demands and responses, through application of standard applied mechanics and structural design principles to the loading conditions found on ships
3. Provide understanding of the architecture, design, and selection of ship machinery systems, including propulsion, electrical power generation, and auxiliary systems.
4. Provide advanced leadership training required to oversee complex ship building, ship design, and ship procurement programs.
5. Deliver multidisciplinary projects effectively (project management, leadership and team building, effective communications, sustainability)
6. Use data appropriately for technical and business decision-making
7. Understand the critical components of how business works
8. Appreciate the impact of cross-cutting themes in industry

Contribution to UBC’s Mandate and Strategic Plan
In Place and Promise: The UBC Plan, our vision statement is: “As one of the world’s leading universities, The University of British Columbia creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world.” The program will act as one route to the fulfillment of this promise. With the involvement of faculty from all areas in APSC and the partnership of the Faculty of Commerce and Business Administration; the development of new facilities and the improvement of existing study spaces; and collaboration with local stakeholders in the areas of student mentorship, sponsored project topics, and co-op job placements, the program will offer an exceptional learning environment for students and faculty. In addition, the program will attract students from around the world to study in Vancouver’s diverse environment and graduate students, who will, in turn, be in demand across the globe.

Delivery Methods
The Faculty of Applied Science (APSC) has taken the lead in developing a conceptual framework for new Professional Programs comprising a common “Platform” that provides the professional skills required for an experienced graduate to be an effective professional leader, with “Pillars” of specialization courses in particular sectors relevant to APSC’s educational mission and professional communities (the term Platform refers to foundation coursework focused on project management, data analysis, and leadership skills, while the term Pillar is equivalent to specialization). The program will be delivered as an intensive one-year program. It is anticipated that this program will be favourable to post-professional students already in the workplace. The Platform will be delivered by faculty from APSC and the Faculty of Commerce and Business Administration. The Pillar courses will be delivered by faculty from the Department of Mechanical Engineering, the Department of Civil Engineering and the Department of Materials Engineering. Industry mentors will also participate in the Pillar courses as guest lecturers and project advisors as currently exists in the M.Eng. N.A.M.E. program. The M.E.L. N.A.M.E. program requires a minimum of 31 credits of coursework. The distribution will be 9 credits dedicated to the Platform providing the professional skills required for an experienced graduate to be an effective Program manager and 22 credits dedicated to the Pillar in advanced technical courses. The 22 credits of technical courses required for the M.E.L. N.A.M.E. program are taken from the existing M.Eng. N.A.M.E. curriculum. Both the Platform and the Pillar have core courses and there will be no free electives.
Linking Learning Outcomes and Curriculum Design, Optional Work-terms
The number and variety of courses available to students is purposely limited to ensure a robust and streamlined learning experience that is centered on the program learning outcomes. Each of these outcomes corresponds to at least one of the core courses and summarizes the goal of that course. Work experience is an essential admission requirement and also a key feature of the optional co-op component.

Program Strengths
The program offers a comprehensive curriculum that is grounded in collaborative projects embedded in the Platform coursework, and that draws upon the combined expertise of faculty in the participating units. Within the Pillar courses, the objective is to equip the candidate with a thorough understanding of the entire field of naval architecture, without providing “drill-down” specialization within one discipline. Typically in naval architecture, a holder of an M.Eng. or M.Sc. will have this foundation, but will also have deeper training in one of four specializations: hydrodynamics, ship motions, ship structures, or ship machinery. In effect the M.E.L. N.A.M.E. program is erecting a fifth specialization of ship project management.

Related Programs at UBC or other BC Post-secondary Institutions
The existing and separate Master of Engineering in Naval Architecture and Marine Engineering program (M.Eng. N.A.M.E.) will continue to be offered as there are separate market segments and demands for both programs. The M.Eng. N.A.M.E. is aimed at newly graduated engineers who desire the needed technical skills to enter the marine sector. The M.E.L. N.A.M.E. is aimed at early-career engineers with 3 or more years of industry experience.

A selection of courses offered through existing graduate programs will be used for the new program. There are currently no existing programs at UBC or within British Columbia that offer this program’s combination of technical skills and advanced leadership training. Just like the UBC M.Eng. N.A.M.E. program, Memorial University (Newfoundland) offers a master’s degree program in naval architecture and marine engineering. These programs are entirely technical in focus, providing foundational and specialist training in the four technical disciplines (hydrodynamics, motions, structures, machinery) but without the broad engineering management platform content.

Institutional Contact
University of British Columbia
Faculty of Applied Science
Elizabeth Croft, Associate Dean, Education & Professional Development
604-822-6614 elizabeth.croft@ubc.ca
Appendix to the Executive Summary (for internal UBC purposes only)

Briefly describe the resources that will be required for the program:

**Budget and Funding**
The program will be delivered as fiscally sustainable. The budget is sensitive to enrolment numbers and has been calculated for an initial enrolment of 20, expected to increase to an enrolment of 41 by 2020. Tuition is $27,000 per year for domestic students and $46,000 per year for international students.

The existing and separate Master of Engineering in N.A.M.E. program will continue to have an enrolment target of 20 students per year as there are separate market segments and demands for both programs. The M.Eng. N.A.M.E. is aimed at newly graduated engineers. The M.E.L. N.A.M.E. is aimed at early-career engineers with 3 or more years of industry experience.

**Space Requirements**
Dedicated space for APSC Professional Programs is being developed within a new building to be completed in 2016. UBC has swing space available which will be used as interim accommodation until new facilities are ready.

**Library**
The new courses for this program have been reviewed by the Library. There are no new Pillar courses or no changes to existing courses that require any additional Library support, and the Platform courses requiring new resources will be funded by the APSC Dean’s Office. (See Appendix 2 & 3 and Appendix 7 Platform Proposal)
1. Introduction

This proposal represents one of a suite of new professional programs to be offered at the master’s level in the Faculty of Applied Science (APSC). The programs were developed in parallel and will be delivered in parallel. That is, there will be a common start date and timeline for cohorts in all of the programs. A key feature of this suite of programs is that they are structured in two parts, which will be referred to as the “Platform” and the discipline-specific “Pillar”. The Platform is foundational coursework focused on project management, data analysis, and leadership skills. It is a largely common element accessible to the suite of new APSC professional programs. The Pillar is equivalent to a specialization. It contains technical material specific to Naval Architecture and Marine Engineering. This program will provide a unique combination of knowledge that will make this attractive to practicing engineers. Successful completion of the Platform and a Pillar will result in the granting of one degree. Details of the contents of both the Platform and the Master of Engineering Leadership in Naval Architecture and Marine Engineering Pillar are documented in this proposal.

2. Program Rationale

2.1. Defining the Need for the Program

APSC has taken the lead in developing a conceptual framework for new Professional Programs comprising a common “Platform” that provides the professional skills required for an experienced graduate to be an effective professional leader, with “Pillars” of specialization courses in particular sectors relevant to APSC’s educational mission and professional communities.

An over-arching goal of the professional programs for APSC is to revitalize our graduate programs. This is an unprecedented opportunity to develop and support new, professionally relevant, graduate technical curricula available to all Ph.D., M.A.Sc. and Professional Master’s, students while providing a distinctive program of management and leadership courses to our professional students within the Master of Engineering Leadership in Naval Architecture and Marine Engineering.

The program strives to provide students with a comprehensive and innovative education that enables them to build on their past work experience and technical skills, adding leadership and interdisciplinary opportunities for learning and interaction with other students. The program will position UBC as a leading institution for continuing education training of leaders in the field of study. Consultation with stakeholders has revealed that experienced engineers and early-career professionals in the chosen focus areas require sector-relevant, cross-disciplinary technical skills. They also require project management, communication and business skills to be effective leaders. And few, if any, schools in Canada or the United States of America offer this combination of skills in a technical master’s program.
The existing and separate Master of Engineering in Naval Architecture and Marine Engineering program (M.Eng. N.A.M.E.) will continue to be offered as there are separate market segments and demands for both programs. The M.Eng. N.A.M.E. is aimed at newly graduated engineers who desire the needed technical skills to enter the marine sector. The M.E.L. N.A.M.E. is aimed at early-career engineers with 3 or more years of industry experience.

The program will combine an essential understanding of the engineering science and physics of ship design, coupled with the broad business training contained in the program’s platform courses. The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses. Some large corporations and government activities within the maritime field find themselves deploying skilled business personnel to lead engineering teams. Often this results in a ‘communications gap’ between managers and technical staff thus impairing team effectiveness. The M.E.L. N.A.M.E. program will create Program Managers who are peers to their engineering team members, but whereas those team members may bring specialist skills in an engineering discipline (e.g. hydrodynamics), the graduate of this program will have specialist skills in program management.

Over the past year, members of the University’s Flexible Learning Initiative and the APSC Dean’s office have formed and worked closely with a Program Advisory Committee consisting of faculty from all areas of APSC. The following program proposal is the result of collaborative planning on the part of this committee.

2. Professional Program Mission Statement and Context

The University of British Columbia, Faculty of Applied Science, wishes to attract students into a high quality, sector-focused, distinctive and integrated Applied Science Professional Program that has resources to be delivered sustainably and fiscally meets the University’s goals.

1. **UBC continues to encourage innovative** learning approaches within the fiscal model of cost recovery.

2. **The Flexible Learning Strategy** introduced in 2014 lists the development of new Professional Programs as a priority.

UBC has the opportunity to deliver a distinctive APSC Program in line with the University’s Professional Program objectives.

2.3. Applied Science Professional Program Approach

2.3.1. Guiding Principles of the Program Advisory Committee

1. There is ongoing meaningful engagement with stakeholders in market research, development, delivery and career opportunities.
2. Our target market is candidates who might consider either an M.B.A. or M.Eng. Management, but would prefer to develop both sector-relevant technical skills and management and leadership skills – our program will be distinctive in the market.

3. We take advantage of a standardization of core courses to improve quality of offering while reducing costs and complexity.

4. The program is positioned as a premium alternative to a conventional professional master’s program by offering distinctive, high quality, cross-disciplinary technical and non-technical skills to the experienced professional who wants to become a Sector Specialist.

5. Pillars are developed around areas of unique research and teaching strength in APSC, where multiple program “Faculty Champions” are identified, that have strong relevance to our professional community and societal benefit, have strong learner demand, and have strong industry demand for people trained in this sector.

6. Graduate courses offered in the N.A.M.E. Pillar will be open to all APSC graduate students with the appropriate prerequisites, and similarly to students in other graduate programs, space permitting. This will allow APSC to revitalize our graduate program offerings around areas of research and teaching strength, build strong interdisciplinary sector training capacity, and improve our connections to our professional community.

2.3.2. Extensive Market Research was used to develop the Value Propositions

In order to establish the viability of offering new programs, the following activities were undertaken to validate the structure and proposed N.A.M.E. Pillar. Market research information is provided in Appendix 6.

The objectives and curriculum were developed in conjunction with meaningful stakeholder consultation in three phases.

1. Market research and concept development conducted through:

   a. Multiple meetings of the Inter-Disciplinary Working Committee of Applied Science that included the following core members:
      i. Elizabeth Croft (Associate Dean)
      ii. James Olson (Associate Dean)
      iii. Hugh Brock (Vice Provost)
      iv. Reza Vaziri (Department Head, Civil Engineering)
      v. Peter Englezos (Department Head, Chemical and Biological Engineering)
      vi. Sathish Gopalakrishnan (Professor, Electrical Engineering)
      vii. Scott Dunbar (Department Head, Mining Engineering)
      viii. Walter Merida (Director, Clean Energy Research Centre)
      ix. Jon Mikkelson (Director, Naval Architecture & Marine Engineering)
      x. Panos Nasiopoulos (Director, ICICS)
b. Survey of current M.Eng. students and alumni (Appendix 6)
c. Survey of APSC employers (via Engineering Co-op Database) (Appendix 6)
d. Desktop research of comparable programs in Canada and the United States of America

2. Validation by external sector experts

Naval Architecture and Marine Engineering Industry Validation and Focus Group:

Mr. Rob Allan  Small ship design firm
Mr. Dan McGreer  Large ship design firm
Mr. Bruce Patterson  Ship Owner (BC Ferries Corp)
Dr. Iain Braidwood  Ship Owner (TeeKay Shipping)
Mr. Ben Thompson  Ship Quality Assurance Consultant (Lloyds Register)

The design and value proposition of the M.E.L. N.A.M.E. was discussed and supported by a panel of industry expert practitioners. The Industry Focus Group expert practitioner comments were weighted very heavily in the market research as they represent the customer base for the program. The Industry Focus Group was supportive of the M.E.L. N.A.M.E. proposal, provided positive feedback on the technical course content of the Specialized Pillar in addition insightful comments of support regarding the Platform courses which were seen as unique and distinctive offerings. The Industry Focus group stated that there was indeed a need for the M.E.L. N.A.M.E. specialty for early-career professionals, but that the M.E.L. N.A.M.E. did not replace the need for the current N.A.M.E. M.Eng. specialization due to a different market segment of students.

The need for the M.E.L. N.A.M.E. was identified by larger firms on the Industry Focus group as truly advantageous for the sector and seen as a true benefit for participants who wanted to excel in their organizations who were early-career who required more in-depth technical skills and leadership and managerial development. In the smaller firms the need for M.E.L. N.A.M.E. was not as strong as the leadership roles within smaller organizations are normally more centralized and lay with a few senior persons, whereas larger firms with cascading leadership tasks downward in their organizations require individuals who possess the skills set attained from taking an M.E.L. N.A.M.E.. Further, all of the panelists unanimously felt that the duration of the program, tuition pricing proposal and targeted intake numbers were appropriate.

3. Refinement through sector focus groups

A presentation of the Master of Engineering and Leadership in Naval Architecture and Marine Engineering (M.E.L. N.A.M.E.) was given to the N.A.M.E. Industry Advisory Committee on May 29th, 2014 and again at the Mechanical Engineering
External Advisory Committee on September 25th, 2014. At both meetings the question was raised of the overlap or competition between the N.A.M.E. M.Eng. and M.E.L. N.A.M.E. degrees. It was explained to both advisories that the student cohort participating in the M.Eng. N.A.M.E. were primarily new graduates who required more technical development. The M.E.L. N.A.M.E. enrolment focus was on attracting early-career professional engineers already in industry that had been exposed to some of the technical aspects covered in the Pillar however required a higher level of technical competencies and also required platform knowledge that would provide them with the necessary business and leadership components to advance in their career.

The final opinions of both committees was that the N.A.M.E. M.E.L. degree did not compete or replace the existing M.Eng. degree, but instead represented an alternative specialization within the field of naval architecture that was much needed. Traditionally naval architects have specialized in structural design, hydrodynamic design, or machinery systems. The N.A.M.E. Industry Advisory Committee felt that M.E.L. N.A.M.E. added a “specialization of Team Leadership” that differentiated and added value to the program and was a core need in the industry.

Validation: Christopher McKesson

The responses received from both the N.A.M.E. Industry Advisory Committee and the Mechanical Engineering Industry Advisory Committee were overwhelmingly positive and very supportive of the format and content of the one-year, full-time professional program. Industry Advisory Committee members felt that the M.E.L. N.A.M.E. program was very relevant education to the early-career professional and several participants indicated that they would be willing to send employees from their organizations to this program. All present at both committee’s expressed interest in hiring future graduates. There were some questions regarding online delivery versus in person delivery for those already in industry however the program was explained as a one-year full-time delivery model and the timing and duration of the program was fully supported.

2.3.3. Market Insights

Consistently repeated messages, related to the potential student market and the relevance of the particular focus areas, were heard through all market research activities outlined above.

For example:
1. Experienced engineers in their chosen careers require sector-relevant, cross-disciplinary technical skills.
2. Engineers require project management, communication and business skills to be effective leaders.
3. Few, if any, schools in Canada and the United States of America offer this combination of skills in a technical master’s program.
4. There is a demonstrated need for a program. (Figure 1)
5. Students are willing to apply to graduate-level programs that are relevant to the stakeholders in their chosen sector. (Figure 2)

Figure 1 Estimated Market Size (number of students per year - Engineering)

Figure 2 Estimated Market Size ($ per year - Engineering)

2.4. Program Overview

2.4.1. Demand for the Program

The demand for professionals with technical and integrated professional skills is growing rapidly, and Canada currently has neither the trained personnel required to meet the needs, nor the means of training them. There are currently no other Canadian institutions that offer
sector-focused (rather than research-oriented) training at the graduate level with the proposed Platform and Pillar structure.

The demand for this program comes from multiple sides. British Columbia and Canada need the proposed program for the success of the provincial and federal Pillar industries to stay competitive with international markets. Given UBC’s location, the research of current faculty, and the recent achievements of UBC undergraduate students in the Pillar areas, it is appropriate that UBC be the institution to implement a graduate-level program that is lacking in Canada and is now more important than ever.

Figure 3 Placement of New Program Sector Specialist with Existing Programs

2.4.2. Objectives of the Proposed Program

The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses. Some large corporations and government activities within the field find themselves deploying skilled business personnel to lead engineering teams. Often this results in a ‘communications gap’ between managers and technical staff thus impairing team effectiveness. The M.E.L. N.A.M.E program will create Program Managers who are peers to their engineering team members, but whereas those team members may bring specialist skills in an engineering discipline, the graduate of this program will have specialist skills in program management. The program will:

1. Equip tomorrow’s marine professionals with the critical thinking and practical skills necessary to make important contributions to the ship design, shipbuilding, and ship operation sectors and to make Canada a leader in the global marine market.
2. Capitalize on Vancouver’s strategic coastal setting, industrially diverse environment and UBC’s current marine stakeholder connections by offering an
attractive hands-on education that allows students to get valuable work experience; and allows BC’s marine companies to benefit from the minds of UBC’s top graduate-level students.

3. Link the concerns of extra-university partners by offering students a project-based curriculum that explores cutting edge concepts in collaboration with sector professionals in the Vancouver region.

4. Emerge as the leading institution for the continuing education of current leaders in the Naval Architecture and Marine Engineering Pillar Sector and for the training of tomorrow’s leaders.

5. Graduate highly skilled professionals who can fill the jobs gap currently existing and expected to increase in Canada in the foreseeable future as a direct result of the National Shipbuilding Procurement Strategy.

6. Continue to develop a high profile faculty with international expertise in the theory and practice of the Naval Architecture and Marine Engineering Pillar areas.

2.4.3 Program Learning Outcomes

The M.E.L. N.A.M.E. will enable students to build on their past work experience and technical skills, adding leadership and interdisciplinary opportunities for learning and interaction with other students. The learning outcomes of the M.E.L. N.A.M.E. program are to:

- Provide understanding of the ship’s interaction with the water, in the fields of hydrostatics, hydrodynamics, and ship dynamics
- Provide understanding of the ship’s structural demands and responses, through application of standard applied mechanics and structural design principles to the loading conditions found on ships
- Provide understanding of the architecture, design, and selection of ship machinery systems, including propulsion, electrical power generation, and auxiliary systems.
- Provide advanced leadership training required to oversee complex ship building, ship design, and ship procurement programs.
- Deliver multidisciplinary projects effectively (project management, leadership and team building, effective communications, sustainability)
- Use data appropriately for technical and business decision-making
- Understand the critical components of how business works
- Appreciate the impact of cross-cutting themes in industry

2.5. Contribution to UBC Mandate and Strategic Plan

UBC is a comprehensive research-intensive university, consistently ranked among the 40 best universities in the world. Since 1915, UBC’s West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning. In Place and Promise: The UBC Plan, our vision statement is: “As one of the world’s leading universities, The University of British Columbia creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable
society, and supports outstanding research to serve the people of British Columbia, Canada and the world.”

The program will act as one route to the fulfillment of this promise. With the involvement of faculty from all areas in APSC and the Faculty of Commerce and Business Administration; the development of new laboratory facilities and the improvement of existing study spaces; and collaboration with local stakeholders in the areas of student mentorship, sponsored research topics, and co-op job placements, the program will offer an exceptional learning environment for students and for faculty undertaking research. In addition, the program will attract students from around the world to study in Vancouver’s diverse environment and graduate students, who will, in turn, be in demand across the globe.

When we speak of globalization today, it is a synthesis of exploration, learning, and the global exchange of resources and knowledge—not unlike the university itself. Accordingly, the program addresses many of the goals outlined in The UBC Plan:

2.5.1. Student Learning

- The University provides the opportunity for transformative student learning through outstanding teaching and research, enriched educational experiences, and rewarding campus life.

The M.E.L. N.A.M.E. program will offer a comprehensive curriculum that draws upon the combined expertise of faculty in Mechanical, Civil, and Materials Engineering, relevant partner Faculties such as the Faculty of Commerce and Business Administration, and of industry sector professionals. The program will synthesize theory and practice through a challenging project-based learning experience that will equip students with the skills and experience needed to excel in the world’s most important and fast-growing industries. The number and variety of courses available to students will be purposely limited, as will student enrolment, to ensure a robust and streamlined learning experience that is centered on the program objectives. As well, strong stakeholder support and existing relationships between UBC APSC and local naval architecture and shipbuilding companies promises students both a rich educational experience and employment opportunities after graduation.

2.5.2. Innovation Excellence

- The University creates and advances knowledge and understanding, and improves the quality of life through the discovery, dissemination, and application of research within and across disciplines.

As a leading research and educational facility, UBC is expected to be a world leader, and the Canadian leader in the areas of the program, as we invest time and resources to create, sustain and grow for the future. By expanding UBC’s current scholarship in naval architecture and marine engineering, UBC will not only be a leader in the exchange of knowledge in these areas; it will also, by contributing to the involved industries, be a central part of the means by which people and knowledge are mobilized.
2.5.3. Community Engagement

- The University serves and engages society to enhance economic, social, and cultural well-being.

Engaging with local naval architecture companies with regard to the needs of the marine sector is one of the key components of the program. With a curriculum grounded in collaborative community projects, a reciprocal and experiential learning environment will be created between students and local stakeholders.

2.5.4. International Engagement

- The University creates rich opportunities for international engagement for students, faculty, staff, and alumni, and collaborates and communicates globally.

From cruise ships to ferries and mercantile vessels, ships are crucial to the mobilization of people and goods across international borders, and consequently needed all over the world. The M.E.L. N.A.M.E. program will graduate students who will be in demand across the globe, from industries that will be based in Canada. It will graduate the trained professionals needed to ensure the self-sufficiency of Canada’s marine industry, and the global influence of Canada itself. Strong marine industries, backed by highly qualified professionals, are key to securing Canada’s global presence – to improving and sustaining Canada’s innovation and economy, and strengthening Canada’s contribution to the global market. By offering the M.E.L. N.A.M.E. program, UBC will therefore become an invaluable player in both national and international development.

2.5.5. Sustainability

- The University explores and exemplifies all aspects of economic, environmental, and social sustainability.

The program will play a role with the rest of the UBC community to meet society’s needs without compromising those of future generations. Through the platform courses that will have a focus on leadership and sustainability, to the activities and services provided both inside and outside of the classroom, the program is designed to be accountable and transparent in the use of available resources.

2.6. Support for New APSC Professional Master’s Programs

The University supports the formation of new professional master’s programs having goals in alignment with that of the institution. Support and resources have been provided and continue to be available in a variety of forms including assistance with market research, budgeting, and curriculum development. We have and continue to take advantage of all assistance in the creation, development, delivery and evaluation of the program. As part of the Flexible Learning Initiative, targeted growth of professional master’s programs is one of UBC’s four priorities over the next five years. Continued support for the Flexible
Learning Initiative has been confirmed by our new UBC President, Dr. Arvind Gupta. The strategic plan for flexible learning campus-wide is articulated in its own web space, which can be found here:

http://flexible.learning.ubc.ca/what-is-flexible-learning/flexible-learning-goals/

APSC has identified its professional master’s programs as having the potential to benefit greatly from not only revitalization, but also expansion. This initiative has been led by the Dean’s office and has received consistent support from the Provost’s Office through the Flexible Learning Initiative. An over-arching goal of these new programs is to revitalize the APSC graduate program offerings which have not been systematically redeveloped for over 20 years. New Pillar courses will be available to all Ph.D., M.A.Sc. and Professional Masters students providing high quality, sector relevant, technically leading edge education for our graduate students. This objective is in line with the espoused goal of the Faculty of Graduate and Postdoctoral studies to rethink graduate education as a preparation not only for academe but also for service in a wide range of leadership opportunities in society.

2.6.1. Opportunity Identification

It was felt that an opportunity may exist that had, as yet, not been explored in APSC. Given the unique structure of the Faculty, which is home to not only engineering programs, but also the School of Nursing, the School of Architecture and Landscape Architecture and the School of Community and Regional Planning, it was felt that the potential existed to create a suite of interdisciplinary master’s degrees that were aligned with stakeholders in a way that a program housed in a single department or school could not. In order to establish the market for such opportunities, and to establish potential interdisciplinary themes to pursue, the following activities were undertaken:

1. Competitor scans
2. Alumni tracking
3. Ongoing dialogue with stakeholders to identify skills gaps
4. Targeted market research / focus groups
5. Dialogue with faculty to shape opportunities and program champions
6. Initial feasibility assessment
7. Distillation of program concept(s) including clear objectives in launch
8. Straw man concept for new professional program, with clear student target
2.6.2. Program Development

Upon successful conclusion of the opportunity identification phase, program development initiated via the steps outlined below, with this document representing the basis of the material required for step 9. A key element that emerged from the opportunity identification phase was a program structure that featured a largely common Platform, comprising approximately 40% of each program, which would be the foundation for all new professional master’s programs in APSC. The remaining 60% of the course content is then comprised of a set of courses drawn from across the Faculty that provide sector-specific technical content. The technical material is referred to as a Pillar. This structure was identified quite early on in the development process and it has been referred to internally as a “Platform and Pillar” model from both the curriculum development and delivery perspectives.

1. Appointment of program Faculty Champion (Chris McKesson, Instructor – works in close consultation with Director Naval Architecture and Marine Engineering, Jon Mikkelsen)
2. Discussions with N.A.M.E. Advisory Committee
3. Refinement of proposition, program design and pricing
4. Definition of operating model / formation of any partnerships
5. Financial modelling
6. Funding application
7. Planning for course (re)design (CTLT)
8. Development of project plan
9. Presentation to Faculty council, Senate, Board, Ministry – and plan refinement as needed
10. Full program design in place
11. Approval from Senate, Board and Ministry
2.6.3. Implementation

In parallel with the approval process, implementation and launch of the new professional programs will require a significant effort well in advance of the commencement of the programs for the first cohort, which is anticipated for January 2016. Key activities are summarized here:

1. Development of course materials and flexible learning (FL) delivery / co-op modules
2. Development and launch of multi-touch marketing efforts (ideally at least one-year in advance)
3. Set up in central systems (Enrolment Services, UBC IT)
4. Evaluation of applications (ideally application deadline seven months in advance) and submission of accepted applications to Department and APSC Dean’s Office for approval
5. Program ready to launch with inaugural group of students

2.6.4. Program Management

Due to the intensive nature of the proposed programs and the expected audience, which would be primarily early-career professionals, these programs will require dedicated resources within the Faculty to maintain high-quality, responsive service for administrative details surrounding the delivery (e.g. registration issues, scheduling details, facilitation of workshop activities, co-op placements, coordination of interdisciplinary capstone projects, etc.). Additionally, it is anticipated that there will be support for maintaining continuous program improvement, sufficient marketing efforts, ongoing development of community partners and stakeholder participants, and so on. The budget for these programs includes provisioning for the necessary staff, to be located in the Faculty, to ensure the ongoing support for the activities itemized below, which are regarded as necessary to deliver and maintain a program of the highest caliber:

1. Continuous feedback loop to improve delivery and learning outcomes
2. Refreshment of marketing materials, with relationships / channels fostered ongoing
3. Exploration / implementation of any content repurposing opportunities
4. Tracking of student success rates
5. Financial / operational management
6. Ongoing evolution of program to achieve learning, access, reputational and financial objectives

2.7. Relationship to Established Programs

2.7.1. The University of British Columbia

Many of the advanced topics that will be covered under the program are already available through programs in the involved departments and schools of APSC at UBC, but the program will synthesize this material and offer a more interdisciplinary approach. Existing professional programs include:
Master of Engineering (M.Eng.)
Faculty of Applied Science, Engineering
The Master of Engineering is a non-thesis, course-based program designed for students who would like to further their education without pursuing research, or individuals who wish to advance their careers with enhanced technical knowledge. It normally takes 12-16 months to complete 30 credits. Students register for the M.Eng. at the faculty level but generally complete courses within a specific department, and may take a collection of related courses that would be considered a ‘specialization’, although the degree is somewhat generic in that it is simply granted as a M.Eng. in a specific department in most cases. Admission to the M.Eng. is not cohort-based, and the entry point may be either September or January. If there is a demonstrated demand to continue offering the M.Eng. in addition to the M.E.L., then it is within each individual department’s discretion to do so.

Master of Engineering in Naval Architecture and Marine Engineering (M.Eng. N.A.M.E.)
Faculty of Applied Science, Engineering
The Master of Engineering in Naval and Marine Engineering is a program bearing much in common with the M.E.L. N.A.M.E. program being proposed in this document. In fact, this program, along with the Master of Engineering in Clean Energy Engineering, served very much as inspiration for the expansion of our professional master’s programs. It is planned that there will be two versions of the naval architecture program: a version as described herein (M.E.L. N.A.M.E.) which embraces the broad platform in business. A “narrow but deep” technical-only program comprises the existing M.Eng. N.A.M.E. curriculum. The two N.A.M.E. programs address different audiences, have different admission requirements and have significantly different program completion requirements.

Master of Engineering in Clean Energy Engineering (M.Eng. CEEN)
Faculty of Applied Science, Engineering
The Master of Engineering in Clean Energy Engineering was launched in 2009, and also bears much in common with the new program being proposed in this document in that its focus is an interdisciplinary theme. (Note: Going forward, the CEEN specialization will be offered under the M.E.L. credential and is included in the suite of new APSC professional master’s programs. Although the M.Eng. CEEN will no longer be accepting applications, the program will continue until current students graduate.)

2.7.2. British Columbia, Canadian and Other Universities

There are currently no universities in British Columbia or in Canada that offer accredited graduate programs with the proposed Platform and Pillar structure. The nearest known competitors are as follows:

Engineering Master’s Programs:
UBC, Memorial University (Newfoundland), The University of Michigan, and the University of New Orleans offer master’s degree programs in naval architecture and marine engineering. These programs are entirely technical in focus, providing foundational and specialist training in the four technical disciplines (Hydrodynamics, Motions, Structures, Machinery) but without the broad engineering management platform content.
Engineering Management Programs:
Some universities offer degrees in engineering management. The University of New Orleans offers such a degree, specifically in collaboration with that school’s Naval Architecture and Marine Engineering program. But the UNO ENMG program consists primarily of business and management coursework, with the naval architecture coursework consisting of relatively few elective opportunities. It is not the integrated M.E.L. N.A.M.E. program proposed for UBC.

Defense Management Programs:
Several US universities offer courses accredited by the US Defense Management College. US Defense program managers are required to complete a DMC curriculum in program management, which has several similarities to the UBC platform content. Thus US DOD engineers who are moving into management positions take this course, and sometimes they do this in parallel with completing an engineering master’s degree. In this case the competition is very different from the UBC proposal, because the student is enrolled in two disparate parallel programs of training and not a single integrated course.

Figure 5 Assessment of Categories of Professional Engineering Master’s Programs

2.7.3. Level of support and recognition from other post-secondary institutions

As a new program, support and recognition from other post-secondary institutions is limited. However, it is anticipated that participation from faculty members outside of UBC delivering content in the program will promote further support from institutions that offer similar programs both nationally and internationally. Given UBC’s history of expertise in the Pillar area and the fact that UBC’s engineering programs have been ranked second in the nation and among the top 50 worldwide (Times Higher Education), it is expected that
other post-secondary institutions both in Canada and abroad will recognize and support this program.

2.8. Enrolment and Tuition

2.8.1. Enrolment Predictions and Capacity

Significant demand is anticipated for the new programs. The desirability of an educational experience that can lead to rapid career progress upon graduation is reflected in the interest we have seen in existing professional master’s programs.

To maintain a vibrant learning environment and admit the best and brightest applicants, however, the cohort size will be purposely limited. The minimum initial cohort will be 20 students increasing to 41 by 2020. The existing M.Eng. N.A.M.E. will continue to target admittance of 20 students per year.

2.8.2. Tuition Rationale

The program falls under the APSC “Guidelines for Professional Programs” (August 31, 2012) which stipulates that new professional programs in the Faculty, as of January 2009, must generate revenue to cover a range of expenses including equipment, facilities and salaries of faculty and staff involved in course delivery and administration. The primary source of revenue for these programs is through the tuition flow-back from the University to the Faculty and unit delivering the program.

The starting tuition level requested for the program is $27,000 CAD for the one-year program for Canadian citizens and Permanent Residents and $46,000 CAD for the one-year program for international students requiring a Study Permit. Tuition is paid in three equal installments per year, normally in January, May and September. The student is required to pay a minimum of three installments of tuition in order to graduate, but if the program is extended by permission of the program Director, the student pays tuition installments until the program requirements are met. For domestic students, the continuing fee and the extension fee are set by the University. No part-time studies are allowed. Currently, tuition increases by 2% each year.

We are confident that the program can attract students to pay the proposed tuition for the following reasons:

1. Vancouver is an acknowledged centre for the Pillar areas
2. A one-year program fits into the lifestyle framework for most of our potential students
3. The program will draw from an international pool of students
4. The tuition has been researched to be positioned in the lower cost bracket compared to programs at institutions such as MIT and Georgia Tech
Figure 6 Comparison of Tuition within Canada and the United States of America

2.8.3. Scholarships

We are concerned about getting the right students for the program and recognize that the tuition assessment may be prohibitive for some outstanding applicants. As a consequence, we intend to go to stakeholders in each sector seeking named scholarships. We have set aside 7.5 percent of the tuition revenue for financial need.

2.8.4. Potential Sectors of Employment for Graduates

Graduates of the program will have developed those skills and practices that stakeholders value most highly in experienced APSC professionals. They will be creative and visionary to see the potential to use the knowledge and training from the program effectively in their employment choices. Government, the private sector and academia are hungry for experts to develop new processes and systems to explore and implement positive changes in their chosen area. Graduates can expect to find careers locally, nationally, and internationally.

2.8.5. Opportunities for Further Study

The professional master’s degree at UBC is generally not recommended for students who wish to continue on to a Ph.D., and the proposed program will conform to this. As such, it is anticipated that most or all of the graduating students will go on to or return to work in their chosen sector. It is possible, however, that a small number of students will continue to Ph.D.-level study at UBC or elsewhere.
3. Program Description and Specifications

3.1. Admission Requirements

Applicants must normally hold an undergraduate credential in engineering and a minimum of 3 years of relevant experience. Please consult <insert web link> for additional details regarding the experience requirements.

The minimum admission requirement for students with degrees from North American institutions is an average of 76% (UBC-equivalency), calculated from senior-level coursework. An applicant with an average slightly less than 76% may be admitted if they have achieved 80% or higher in at least 12 credits (UBC-equivalency) of senior-level coursework in the prospective area of study.

The minimum admission requirement for applicants with degrees from outside North America is an overall degree average of 76% (UBC-equivalency).

Applicants from a university outside Canada in which English is not the primary language of instruction must present evidence of English language proficiency prior to being extended an offer of admission. Acceptable English language proficiency tests for the MEL NAME are:

- TOEFL (Test of English as a Foreign Language): minimum score of 550 (paper version); 213 (computer version); 80 (Internet version, effective September 2005)
- IELTS (International English Language Testing Service): minimum overall band score of 6.5 with no other component score less than 6.0
- MELAB (Michigan English Language Assessment Battery): minimum overall score of 81
- PTE (Pearson Test of English - Academic): minimum overall score of 59
- CELPIP (Canadian English Language Proficiency Index Program): minimum scores; 4L/4L/4L
- CAEL (Canadian Academic English Language Assessment): minimum overall score of 60

Applicants who do not meet both the academic and English language proficiency requirements stated above, but who have had other significant formal training, relevant professional experience, and/or otherwise possess demonstrable knowledge or expertise that would prepare them adequately for successful study in the graduate program, may be granted admission on the recommendation of the Program Director and the approval of the Dean of Applied Science. Lists of the required application documents are available on the program website. The graduate program office in an area of specialization is responsible for collection and assessment of application documents.

3.2. Program and Pillar Requirements

The program courses will involve a combination of classroom learning and integrated hands-on training. The program requires a minimum of 31 credits of coursework. The
distribution will be 9 credits dedicated to the Platform to provide the professional skills required for an experienced graduate to be an effective technical manager and 22 credits of advanced technical courses dedicated to the Pillar. The Pillar courses were selected from the approved M.Eng. N.A.M.E. curriculum with no change in credit value. Both the Platform and the Pillar have core courses and there will be no free electives. The program will be delivered as an intensive one-year program. It is anticipated that this program will be favorable to post-professional students already in the workplace.

There are seven proposed Pillars leading to the degree of Master of Engineering Leadership at the UBC Vancouver campus (see Appendix 5 for prospective program curriculum). Utilizing the Platform will also be the Master of Health Leadership and Policy in Seniors Care at the UBC Vancouver campus. These programs are distinct and each will be reviewed separately, but as all APSC Professional Programs are conceptualized as sharing a common goal of graduating students with enhanced disciplinary knowledge and business skills. The proposed array of programs is listed in Appendix 5 for information only.

Figure 7 Learning Objectives Relevant to the Three Levels of the Program

### 3.3. Platform Structure utilized by the M.E.L. in Naval Architecture and Marine Engineering Program

#### 3.3.1. Leadership & Sustainability (4.5 credits total)

APPP 501 (1.5) Project Management and Leadership
APPP 502 (1.5) Sustainability and Leadership
APPP 503 (1.5) Organizational Leadership

**Learning Outcomes**
1. Lead multi-disciplinary teams to effectively deliver sustainable projects
2. Articulate ideas, progress and outcomes though oral and written communications
3. Plan and deliver multidisciplinary projects
4. Identify and apply sustainability concepts to influence the triple bottom-line
5. Apply leadership principles to organizational and social change

Content
1. Project management
2. Organizational behaviour and structure
3. Sustainability, ethics and policy
4. Personal and professional leadership effectiveness and communications
5. Application of concepts to trans-disciplinary challenges in organizational and social change
6. Fully integrated into technical streams through sector-relevant projects

3.3.2. Business Foundations (3 credits)

APPP 504 (3) Business Acumen for Technical Leaders

Learning Outcomes
1. Gain broad knowledge of the structure and mechanics of business.
2. How to use data for decision-making
3. Articulate ideas, progress and outcomes though oral and written communication
4. Practical level of understanding in specific aspects of managerial accounting, strategy and performance, market evaluation, operations management, negotiations and contract management and business-case building and valuation

Content
1. Managerial accounting
2. Strategy and performance
3. Market evaluation
4. Operations management
5. Negotiations and contract management
6. Business-case building and evaluation
7. Communication skills

3.3.3. Faculty of Commerce and Business Administration Electives (Select 1.5 credits total)

Learning Outcomes
1. Gain exposure to non-technical issues and skills that impacts business and management

Content (examples of electives from the Faculty of Commerce and Business Administration, credit values range from 0.7-1.5)

1. BAEN 542 (0.8) Prototyping
2. BAEN 543 (0.7) Disruption
3. BAEN 544 (0.8) Pitching Your Idea
4. BAEN 545 (0.7) Qualitative Models
5. BAEN 546 (0.8) Social Entrepreneurship
6. BAEN 547 (0.7) Innovation and Sustainability
7. BAFI 540 (0.8) Finance
8. BAMA 540 (0.8) Marketing Fundamentals
9. BAMA 541 (0.8) Product Service Management
10. BASC 540 (0.7) Operations Fundamentals
11. BAEN 550 (1.5) Fundamentals in Entrepreneurship
12. BAPA 501 (1.5) Government and Business
13. BAPA 510 (1.5) Public Policy and the Environment
14. BASD 501 (1.5) Corporate Social Responsibility
15. BASD 505 (1.5) Environmental Economics, Management, and Technology
16. BASM 501 (1.5) Business Strategy
17. BAHR 505 (1.5) Leadership
18. BAHR 507 (1.5) Two-Party Negotiations

3.3.4. Professional Development

Provide support to candidates who wish to broaden their knowledge
1. Communication Assessment & Support
2. Integrated Sector-specific Experience (Graduate Co-operative Education Program)
3. Employer or Mandatory Sector-specific Project
4. e@UBC Lean Launchpad
5. MITACS Step Business Skills
6. APSC Toastmasters
7. Continuing Studies (PM)
8. APSC Professional Development Workshops
9. English Language Proficiency & Support
10. Data Visualization (VIVA)
11. International Student Support
12. Professional Development Employment Centre (PDEC)
3.4 Overview of Pillar M.E.L. in Naval Architecture and Marine Engineering Program

**Value Chain**

1. Translate client requirements into practical, technical specifications
2. Convert technical specifications into realizable products
3. Guide the process with technical tools (sequencing, blocks, integration etc.)
4. Optimize operations (route, speed, course, safety, machinery, maintenance)
5. Define engineering requirements, design solution and guide execution of mid-life events
6. Define retirement, design process and guide execution

<table>
<thead>
<tr>
<th>Winter Session – Term 2 (January – April)</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME 501</td>
<td>2</td>
</tr>
<tr>
<td>NAME 502</td>
<td>4</td>
</tr>
<tr>
<td>NAME 524</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>APPP 501</td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 502</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**Summer Session – Term 1 (May – June); Term 2 (July – August)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME 566</td>
<td>3</td>
</tr>
<tr>
<td>NAME 522</td>
<td>3</td>
</tr>
<tr>
<td>APPP 503</td>
<td>1.5</td>
</tr>
<tr>
<td>APPP 504</td>
<td>3</td>
</tr>
</tbody>
</table>

**Winter Session – Term 1 (September – December)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME 578</td>
<td>3</td>
</tr>
<tr>
<td>NAME 591</td>
<td>4</td>
</tr>
</tbody>
</table>

Electives (Faculty of Commerce and Business Administration – a current list of approved electives will be listed on the N.A.M.E. program website) 1.5

**TOTAL CREDITS** 31

No free electives.

Figure 9. Course Credit Distribution

### MASTER OF ENGINEERING LEADERSHIP IN NAVAL ARCHITECTURE AND MARINE ENGINEERING

<table>
<thead>
<tr>
<th>APPP 501</th>
<th>APPP 503</th>
<th>NAME 591</th>
<th>NAME 501</th>
<th>NAME 522</th>
<th>NAME 524</th>
<th>NAME 566</th>
<th>NAME 578</th>
<th>NAME 502</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>1.5</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>APPP 504</th>
<th>Elective</th>
<th>Pillar Analysis and Capstone Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3)</td>
<td>(1.5)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PLATFORM (9 CREDITS)</th>
<th>PILLAR COURSES (22 CREDITS)</th>
</tr>
</thead>
</table>

**Total Credit Load for MEL in NAME is 31 Credits**

### 3.5. Supervision and Evaluation

Unlike the graduate-level research programs at UBC, a student in the M.E.L. N.A.M.E. program will not be assigned a single, dedicated supervisor, but rather, will be supervised day-to-day in their work by the various instructors in the program, the M.E.L. N.A.M.E. Director, and the APSC Professional Program Office. Coursework is evaluated through mini-projects, exams, homework assignments and in-class quizzes. For the NAME 591 capstone project, which is a core component of the degree, supervision and evaluation will
be provided by a professor and by sector-specific adjuncts. While a Co-operative Education experience is not a program requirement for the M.E.L. N.A.M.E. program, any student wishing to augment their program with such an experience is welcome to do so. As is standard practice for co-op placements, any optional Cooperative Education placement will be supervised mainly by the sponsoring company, and given a final mark by a UBC faculty member involved in the professional program based on the company’s report and the student’s final report and presentation. Expectations of students will be formalized through individual course syllabi.

3.6. Policies on Program Management and Assessment

The program will be administered under APSC. In delivering this new responsive model program it is essential that the Dean’s Office, APSC Professional Program Office and Graduate Program Offices responsible for the Pillars collaborate and cooperate in an intimate fashion. The student should have access to all services and needs from within the same Faculty to ensure timely and comprehensive service of their academic and non-academic activities. In parallel to internal reviews used to evaluate professional degrees conducted according to the APSC and UBC governance guidelines, the program will be evaluated and developed based on the recommendations of an Advisory Committee. This expert panel of outside professionals and academics will meet once per term. Committee membership will be approved by the Dean of APSC.

4. Calendar Statements
[Removed from this document and attached separately for purposes of Curriculum.]

5. Program Resources

5.1. Program Funding and Budget

The program will be delivered as fiscally sustainable. The budget is sensitive to enrolment numbers and has been calculated for an initial enrolment of 20, expected to increase to an enrolment of 41 by 2020. The existing M.Eng. NAME program will continue to target admittance of 20 students per year. The M.E.L. NAME enrolment is not expected to have any impact on enrolment in existing related programs (i.e. M.Eng. MECH or M.Eng. CIVL).

5.2. Qualified Faculty

Courses will be taught by a combination of faculty from all departments and schools in APSC and also from other faculties at UBC; Visiting Professors, sector-specific adjuncts and guest lecturers will be involved. Platform courses will be taught by APSC and the Faculty of Commerce and Business Administration.
5.3. Pillar Champions or Directors

Each Pillar has a ‘Champion’, or in some cases more than one Champion, who was instrumental in establishing the value proposition for the Pillar and also in the design of the curriculum. It is expected that these individuals will continue to have an instrumental role in the administration and oversight of the Pillar upon program launch, and may become Program Directors (see 5.5). The current Champion is Chris McKesson and the NAME Director is Jon Mikkelsen.

5.4. Library Resources

The new courses for this program have been reviewed by the Library. There are no new Pillar courses or no changes to existing courses that require any additional Library support, and the Platform courses requiring new resources will be funded by the APSC Dean’s Office. (See Appendix 2 & 3 and Appendix 7 Platform Proposal) There is library capacity for both the M.Eng. NAME and M.E.L. NAME.

5.5. Administration

- **Program Directors**

  The Directors for each Pillar will be appointed by the Dean of APSC. The Director will lead the implementation of the program and oversee its evolution, growth and position within APSC. As well as assuming teaching and research commitments, the program Director will represent the program on university committees. The program Director will also be expected to lead the community outreach component of the program to secure co-op opportunities. The Director will take an active role in developing the necessary community and stakeholder linkages to establish a long-term and wide range of co-op placements. The Director will become the principal point of contact for community and stakeholder partners. The Director will report to the Head of the lead department or school as appointed by the Dean of APSC.

- **Program Manager**

  It is expected that the suite of professional programs will be managed on a day-to-day basis by one or more centrally located program managers. This program manager would assist in: student recruitment, student enquiries, website development and maintenance, applications and admissions, timetabling, classroom scheduling, extra-curricular events and workshops, and addressing registration inquiries or issues. Support for admissions and records will also be provided by the APSC Dean’s Office.

5.6. Space Requirements

Dedicated space for APSC Professional Programs is being developed within a new building to be completed in 2016. UBC has swing space available which will be used as interim accommodation until new facilities are ready.
5.7. Consultations with University Units

Consultation requests were sent to the following (see Appendix 4):

1. Faculty of Commerce and Business Administration
2. Faculty of Forestry
3. Faculty of Land and Food Systems
4. Faculty of Science
5. UBC Sustainability Initiative

5.8. Contact Information

Contact Person:
University of British Columbia, Faculty of Applied Science, Dean’s Office
Elizabeth Croft, Associate Dean, Education & Professional Development
elizabeth.croft@ubc.ca 604-822-6614

6. Appendices Accompanying Pillar Proposals

[Removed for purposes of Curriculum; may be requested.]
## UBC Curriculum Proposal Form

<table>
<thead>
<tr>
<th>Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Faculty:</strong> Faculty of Applied Science (APSC)</td>
</tr>
<tr>
<td><strong>Faculty Approval Date:</strong> December 5, 2014</td>
</tr>
<tr>
<td><strong>Effective Session:</strong> Winter, Term 2</td>
</tr>
<tr>
<td><strong>Year:</strong> 2015-2016</td>
</tr>
<tr>
<td><strong>Contact Person(s):</strong> Faculty of Applied Science Dean’s Office, Deborah Feduik (Manager, M.Eng &amp; Graduate Programs)</td>
</tr>
<tr>
<td><strong>Tel:</strong> 604-822-8386</td>
</tr>
<tr>
<td><strong>Email:</strong> <a href="mailto:gradprog@apsc.ubc.ca">gradprog@apsc.ubc.ca</a></td>
</tr>
<tr>
<td><strong>Date:</strong> December 19, 2014</td>
</tr>
</tbody>
</table>

### Proposed Calendar Entry:

**Master of Engineering Leadership in Naval Architecture and Marine Engineering** (M.E.L. in N.A.M.E.)

### Program Overview

The Master of Engineering Leadership in Naval Architecture and Marine Engineering (M.E.L. N.A.M.E.) is a program within the Faculty of Applied Science. The program will combine an essential understanding of the engineering science and physics of ship design, coupled with the broad business training contained in the program’s Platform courses. The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses.

### Admission Requirements

Applicants must normally hold an undergraduate credential in engineering and a minimum of 3 years of relevant experience. Please consult the web link for additional details regarding the experience requirements.

The minimum admission requirement for students with degrees from North American institutions is an average of 76% (UBC-equivalency), calculated from senior-level coursework. An applicant with an average slightly less than 76% may be admitted if they have achieved 80% or higher in at least 12 credits.

### Rationale:

The creation of this program has been driven, in part, by strong interest from the external community (whereby British Columbia will see a high level of activity over the next few decades), in part by a desire to collaborate between the Departments and Schools in the Faculty of Applied Science, and in part to raise UBC’s profile and to attract students (both within Canada and abroad), and to collaborate internationally.

The Naval Architecture and Marine Engineering ‘Pillar’ will provide students with a comprehensive and innovative education that will enable them to advance their career in a path that is distinct from the traditional, purely technical, course-based master’s, the research based master’s or the Master of Business Administration (M.B.A.). The program will combine an essential understanding of the engineering science and physics of ship design, coupled with the broad business training contained in the program’s platform courses. The intent is to produce engineering Program Managers who possess sufficient technical understanding to direct detailed engineering analyses.
credits (UBC-equivalency) of senior-level coursework in the prospective area of study.

The minimum admission requirement for applicants with degrees from outside North America is an overall degree average of 76% (UBC-equivalency).

Applicants from a university outside Canada in which English is not the primary language of instruction must present evidence of English language proficiency prior to being extended an offer of admission. Acceptable English language proficiency tests for the MEL NAME are:

- TOEFL (Test of English as a Foreign Language): minimum score of 550 (paper version); 213 (computer version); 80 (Internet version, effective September 2005)
- IELTS (International English Language Testing Service): minimum overall band score of 6.5 with no other component score less than 6.0
- MELAB (Michigan English Language Assessment Battery): minimum overall score of 81
- PTE (Pearson Test of English - Academic): minimum overall score of 59
- CELPIP (Canadian English Language Proficiency Index Program): minimum scores; 4L/4L/4L
- CAEL (Canadian Academic English Language Assessment): minimum overall score of 60

Applicants who do not meet both the academic and English language proficiency requirements stated above, but who have had other significant formal training, relevant professional experience, and/or otherwise possess demonstrable knowledge or expertise that would prepare them adequately for successful study in the graduate program, may be granted admission on the recommendation
of the Program Director and the approval of the Dean of Applied Science. Lists of the required application documents are available on the program website. The graduate program office in an area of specialization is responsible for collection and assessment of application documents.

**Transfer Credit**

1. Graduate students who have earned credits outside their current master's program (e.g., from a different university, in a different UBC master's program, as an undergraduate, or as an unclassified student) may transfer up to 12 credits or up to 40% of the total number of credits needed for completion of their current program (whichever is more), provided that:
   - the courses were not used to satisfy the requirements of another credential;
   - the courses were not used as a basis for admission to the graduate degree program;
   - at least a B standing (UBC 74%) was obtained in courses considered for transfer;
   - the courses considered for transfer credit have been taken within five years of commencement of the current degree program.

2. No more than 6 credits of transfer credit may be at the undergraduate level (300-/400-level).

3. The 12-credit (40%) restriction applies to students in UBC-approved Exchange Agreements established by the UBC Go Global Office.

4. Requests for transfer credit must be accompanied by a letter from the home graduate program addressed to the Dean of the Applied Science. The letter must provide an academic justification for allowing the transfer credit on a course by course basis.
   - Courses taken as a UBC Access Studies
(or non-degree) student may be approved for transfer toward a graduate program (in accordance with transfer credit regulations specified above) with the permission of the graduate program and the Dean of Applied Science.

**Program Requirements**

Degree completion requires completion of 31 credits. This includes 22 credits of Pillar courses and 9 credits of Platform courses, including 1.5 credits of approved electives from the Faculty of Commerce and Business Administration. Platform refers to foundational coursework focused on the professional skills required for an experienced graduate to be an effective professional leader. These courses are common across many of the Applied Science Professional Master’s programs. The Pillar contains the relevant technical material and is equivalent to a specialization. Each student's coursework must be approved by the N.A.M.E. graduate program office. A complete list of the courses required for successful completion are available on the program website <www.name.engineering.ubc.ca>.

Students in the M.E.L. NAME may choose to augment their program with a Co-operative Education Placement or an entrepreneurial experience. Participation in either of these options will not contribute to the degree requirements. Students should be advised that choosing to participate in a co-op term may extend the duration of the program.

**Financial Assistance**

Financial assistance based on academic merit and financial need may be available.

Students should consult the M.E.L. N.A.M.E. program website for more information.

**Contact Information**
<table>
<thead>
<tr>
<th>Faculty of Applied Science</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dean’s Office</td>
<td></td>
</tr>
<tr>
<td>5000-2332 Main Mall</td>
<td></td>
</tr>
<tr>
<td>Vancouver, BC V6T 1Z4</td>
<td></td>
</tr>
<tr>
<td><a href="http://www.name.engineering.ubc.ca">www.name.engineering.ubc.ca</a></td>
<td></td>
</tr>
<tr>
<td>Email: <a href="mailto:name@apsc.ubc.ca">name@apsc.ubc.ca</a></td>
<td></td>
</tr>
</tbody>
</table>
18 February 2015

To: Vancouver Senate

From: Senate Curriculum Committee

Re: February 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, revised courses, new program option, revised programs, and revised parchments brought forward by the faculties of Applied Science, Arts, Dentistry, Education, Graduate and Postdoctoral Studies (Applied Science, Arts, Education, and Forestry), and Science be approved.”

Respectfully submitted,

Mrs. Carol Jaeger, Vice-Chair

Senate Curriculum Committee
FACULTY OF APPLIED SCIENCE
New courses; new program option; and revised parchment.
APSC 377 (3) Nuclear Weapons and Arms Control; CHBE 201 (3) Integrated Technical Communication; ELEC 281 (3) Technical Communication; CPEN 281 (3) Technical Communication; MTRL 264 (3) Transport Phenomena II – Heat Transport; APSC>Bachelor of Applied Science>Minor in Science; Electrical and Computer Engineering Parchment (Master of Engineering)

FACULTY OF ARTS
New and revised courses; and new minor program option.
HIST 408 (3) U.S. Foreign Relations from Independence to World War II; ANTH 210 (3) Eating Culture; ANTH 423 (3) Ethnography of East Africa and the Swahili Coast; Minor in Education (Arts>Bachelor of Arts>Program Requirements; Arts>Bachelor of Fine Arts>Introduction; Vancouver School of Economics>Bachelor of International Economics>Degree Requirements; Arts>Bachelor of Media Studies>Minor Programs; School of Music>Bachelor of Music>Degree Requirements); ENGL 140 (3) Challenging Language Myths; FNEL 180 (3) Introduction to Endangered Language Documentation and Revitalization; FNEL 282 (3) The Structures of Endangered Languages: Conservation and Revitalization; FNEL 380 (3) Technologies for Endangered Language Documentation and Revitalization; LING 140 (3) Challenging Language Myths; PSYC 335 (3) Gambling and Decision Making

FACULTY OF DENTISTRY
Revised program.
Dentistry>Doctor of Dental Medicine>Academic Regulations>Attendance

FACULTY OF EDUCATION
New courses.
ECED 400 (4) Introduction to Early Childhood Education and Care; ECED 401 (3) Supporting young Children’s Health and Well-Being in Early Childhood Settings; ECED 442 (3) Supporting Indigenous Infants and Young Children within the Context of Their Communities

FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES
New and revised courses; revised programs; and revised parchments.
Applied Science
EECE 587 (3) Radio-Frequency Integrated Circuits; EECE 593 (3) Active Silicon Photonics Design; Electrical and Computer Engineering Parchments (Master of Applied Science; Doctor of Philosophy); LARC 553 (3) Green Network Planning; LARC 590 (3) Graduate Project Part I; SALA>Master of Landscape Architecture>Degree Requirements
Arts
JRNL 527 (3) Internship
Education
LLED 559 (3) Early Literacies with Digital Technologies and Media; G+PS>Degree Programs>Media and Technology Studies Education; KIN 515 (3) Gap Analysis
Forestry
G+PS>Degree Programs>Forestry>Master of International Forestry>Program
Requirements

FACULTY OF SCIENCE

New and revised courses:
CHEM 208 (3) Coordination Chemistry; CHEM 211 (4) Introduction to Chemical Analysis; CHEM 218 (3) Fundamentals of Reactivity in Inorganic Chemistry; CHEM 245 (1) Intermediate Synthetic Chemistry Laboratory; CHEM 300 (3) Communicating Chemistry; CHEM 318 (3) Principles of Catalysis; CHEM 319 (1) Practical Skills for Chemical Research; CHEM 327 (3) Introduction to Materials Chemistry; CHEM 329 (1) Research Ethics and Data Analysis Skills; CHEM 419 (1) Establishing a Career in Chemical Research
**UBC Curriculum Proposal Form**

**Change to Course or Program**

<table>
<thead>
<tr>
<th>Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Faculty:</strong> Applied Science</td>
</tr>
<tr>
<td><strong>Department:</strong> Applied Science</td>
</tr>
<tr>
<td><strong>Faculty Approval Date:</strong> Nov 6, 2014</td>
</tr>
<tr>
<td><strong>Effective Session (W or S):</strong> W</td>
</tr>
<tr>
<td><strong>Effective Academic Year:</strong> 2015</td>
</tr>
<tr>
<td><strong>Date:</strong> September 25, 2014</td>
</tr>
<tr>
<td><strong>Contact Person:</strong> Carol Jaeger</td>
</tr>
<tr>
<td><strong>Phone:</strong> 2-2592</td>
</tr>
<tr>
<td><strong>Email:</strong> <a href="mailto:carolj@apsrc.ubc.ca">carolj@apsrc.ubc.ca</a></td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

APSC 377 (3) Nuclear Weapons and Arms Control

The evolution and contemporary significance of nuclear weapons and arms control policy and technology from the perspective of the physical and life sciences and the social sciences and humanities.

Equivalents: POLI 377

Prerequisites: 3rd year standing in BA or BSc programs, or 2nd year standing in BASC program

**Present Calendar Entry:** NA

**Type of Action:** Create New Course

**Rationale for Proposed Change:**

This course is built on the philosophy that a full understanding of nuclear weapons requires an interdisciplinary education across the boundaries of the physical and life sciences and the social sciences and humanities. This course will provide a space for students in the Faculty of Arts and students in the Faculty of Applied Science (as well as students from other faculties admitted by instructor permission) to explore the subject of nuclear weapons in a way that engages and expands their respective educational backgrounds and disciplinary knowledge. The course will be formally cross-listed between the Faculty of Arts and the Faculty of Applied Science. Enrollment is restricted to second, third and fourth year students in the Faculty of Applied Science and third and fourth year students in the Faculty of Arts or Science. The reason for allowing enrollment of second-year standing BASC students is the generally higher level of applied mathematics skills found in the BASC program, and the fact that many APSC students take their impact of technology on society credit requirement in their second year.

This course was developed with support from the UBC Flexible Learning Initiative, and was piloted in 2013 (and again in 2014 W1).

The course is unique due to its mixed pedagogical model: it is team taught by a faculty member from the Department of Political Science (Allen Sens) and the Department of Electrical and Computer Engineering (Matt Yedlin); it features mixed enrollment of Arts and Engineering students who work together on group activities and projects; it is partially “flipped” with extensive course content offered in video form online to facilitate increased student engagement in class; and the course was developed in cooperation with educational outreach and treaty ratification awareness programming of the Preparatory Commission of the Comprehensive Test Ban Treaty Organization (CTBTO) in Vienna.
The course will count as elective credit for Arts and Science students and the impact of technology on society credit for Applied Science students. It will add to the interdisciplinary course offerings available at UBC and provide interested students with a unique opportunity to enhance their knowledge about nuclear weapons and develop their capacities as public advocates for nuclear arms control.

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CHBE 201 (3) Integrated Technical Communication</td>
<td></td>
</tr>
<tr>
<td>Written and oral communication in chemical and biological engineering: business correspondence, laboratory reports, technical description, and poster presentations. Restricted to students in second year of the Chemical and Biological Engineering Programs. <em>This course is not eligible for Credit/D/Fail grading.</em> [2-0-0; 1-0-0]</td>
<td></td>
</tr>
<tr>
<td><strong>Prerequisite:</strong> One of APSC 176, ENGL 110, ENGL 111, ENGL 112, ENGL 120, ENGL 121. <strong>Corequisite:</strong> CHBE 262. <strong>Equivalency:</strong> APSC 201.</td>
<td></td>
</tr>
<tr>
<td><strong>Faculty:</strong> Applied Science</td>
<td></td>
</tr>
<tr>
<td><strong>Department:</strong> Chemical &amp; Biological Engineering</td>
<td></td>
</tr>
<tr>
<td><strong>Faculty Approval Date:</strong> Nov 6, 2014</td>
<td></td>
</tr>
<tr>
<td><strong>Effective Session (W or S):</strong> W</td>
<td></td>
</tr>
<tr>
<td><strong>Effective Academic Year:</strong> 2015</td>
<td></td>
</tr>
<tr>
<td><strong>Date:</strong> September 29, 2014</td>
<td></td>
</tr>
<tr>
<td><strong>Contact Person:</strong> Jamie Piret</td>
<td></td>
</tr>
<tr>
<td><strong>Phone:</strong> 604-822-5835</td>
<td></td>
</tr>
<tr>
<td><strong>Email:</strong> <a href="mailto:james.piret@ubc.ca">james.piret@ubc.ca</a></td>
<td></td>
</tr>
</tbody>
</table>

**Present Calendar Entry:** NA

**Type of Action:** Create New Course

**Rationale for Proposed Change:**
Course developed to suit CHBE student needs.

**X Not available for Cr/D/F grading.**
Course is integrated with another core course in CHBE program.

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC 281 (3) Technical Communication</td>
<td></td>
</tr>
<tr>
<td>Written and oral communication in engineering. Technical description, report preparation, business correspondence, and oral presentation of technical material. Restricted to students in second year of Electrical and Computer Engineering programs. Credit will be granted for only one of ELEC 281, CPEN 281, or APSC 201. <em>This course is not eligible for Credit/D/Fail grading.</em> [3-0-0]</td>
<td></td>
</tr>
<tr>
<td><strong>Prerequisite:</strong> One of APSC 176, ENGL 110, ENGL 111, ENGL 112, ENGL 120, ENGL 121.</td>
<td></td>
</tr>
<tr>
<td><strong>Faculty:</strong> Applied Science</td>
<td></td>
</tr>
<tr>
<td><strong>Department:</strong> Electrical &amp; Computer Engineering</td>
<td></td>
</tr>
<tr>
<td><strong>Faculty Approval Date:</strong> Nov 6, 2014</td>
<td></td>
</tr>
<tr>
<td><strong>Effective Session (W or S):</strong> W</td>
<td></td>
</tr>
<tr>
<td><strong>Effective Academic Year:</strong> 2015</td>
<td></td>
</tr>
<tr>
<td><strong>Date:</strong> September 22, 2014</td>
<td></td>
</tr>
<tr>
<td><strong>Contact Person:</strong> Annette Berndt</td>
<td></td>
</tr>
<tr>
<td><strong>Phone:</strong> 2-1660</td>
<td></td>
</tr>
<tr>
<td><strong>Email:</strong> <a href="mailto:ayberndt@apsc.ubc.ca">ayberndt@apsc.ubc.ca</a></td>
<td></td>
</tr>
</tbody>
</table>

**Present Calendar Entry:** NA

**Type of Action:** Create New Course

**Rationale for Proposed Change:**
To replace APSC 201 and to enhance relevance of course material to ECE students by linking/integrating assignments from technical courses to ELEC 281/CPEN 281, where appropriate and logistically possible.

**X Not available for Cr/D/F grading (undergraduate courses only)**
ELEC 281/CPEN 281 may be aligned with other core courses in the program and is therefore not suited to Cr/D/F.

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPEN 281 (3) Technical Communication</td>
<td></td>
</tr>
<tr>
<td><strong>Present Calendar Entry:</strong> NA</td>
<td></td>
</tr>
<tr>
<td><strong>Type of Action:</strong> Create New Course</td>
<td></td>
</tr>
</tbody>
</table>
Written and oral communication in engineering. Technical description, report preparation, business correspondence, and oral presentation of technical material. Restricted to students in second year of Electrical and Computer Engineering programs. Credit will be granted for only one of ELEC 281, CPEN 281, or APSC 201. This course is not eligible for Credit/D/Fail grading. [3-0-0]

Prerequisite: One of APSC 176, ENGL 110, ENGL 111, ENGL 112, ENGL 120, ENGL 121.

Rationale for Proposed Change:
To replace APSC 201 and to enhance relevance of course material to ECE students by linking / integrating assignments from technical courses to ELEC 281/CPEN 281, where appropriate and logistically possible.

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

Rationale for not being available for Cr/D/F:
ELEC 281/CPEN 281 may be aligned with other core courses in the program and is therefore not suited to Cr/D/F.

Faculty: Applied Science
Department: Materials Engineering
Faculty Approval Date: Nov 6, 2014
Effective Session (W or S): W
Effective Academic Year: 2015

Date: 25 September 2014
Contact Person: David G Dixon
Phone: 2-3679
Email: dixon@mail.ubc.ca

Proposed Calendar Entry:
MTRL 264 (3) Transport Phenomena II – Heat Transport
Conduction, forced and natural convection, and radiation. Heat transfer with fluid flow, applications of heat exchange, and solidification of castings. This course is not eligible for Credit/D/Fail grading. [2-0-2]

Present Calendar Entry: NA
Type of Action: Create New Course

Rationale for Proposed Change:
Two transport phenomena courses are being split into three – fluid mechanics (I), heat transfer (II), and mass transfer (III). This is primarily to expand the coverage of heat transfer, which is the most significant for our program but which gets short shrift in the current situation. The new courses will all be for three credits, and will consist of two lectures plus a weekly two-hour tutorial.

X Not available for Cr/D/F grading
UBC Curriculum Proposal Form
Change to Course or Program

Category: (1)

Faculty: Applied Science
Department: APSC
Faculty Approval Date: Nov. 6, 2014
Effective Session (W or S): S
Effective Academic Year: 2015
Date: October 10, 2014
Contact Person: Carol Jaeger
Phone: 2-2592
Email: carolj@apsc.ubc.ca

URL:
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,195,272,0

Present Calendar Entry: N/A

Type of Action: Create New Minor Option

Rationale for Proposed Change:
Provide additional flexibility for students wishing to explore courses offered by the Faculty of Science and have the opportunity to receive a ‘Minor’ notation. This option provides more flexibility than creating individual, specific, minors, which can be difficult to maintain.

Proposed Calendar Entry:
Minor in Science

Enrolment in the Minor in Science is limited to students eligible for third-year standing with an average of at least 68% in each of the previous two years.

Courses taken for the Minor in Science must be courses in the Faculty of Science that are acceptable for a B.Sc. major or honours in the proposed subject area or field. The minor consists of at least 18 upper-level credits either in a single subject area or area of specialization, together with any necessary prerequisites. The following subject areas have additional constraints or requirements in the selection of courses for the minor: Astronomy, Biochemistry, Chemistry, Environmental Sciences, Oceanography, Physics, and Honors Mathematics. Please refer to the hyperlinked calendar entry for each of these subject areas for additional minor requirements. For some programs, course planning as early as first year may be advisable in order to complete pre-requisite courses for some minor subject areas in a timely fashion.

Students are strongly advised to design a coherent and academically sound course of studies for their proposed minor, which must be approved by the Applied Science Engineering Student Services office at the beginning of third year.
Applications for admission must be made through Engineering Student Services by May 15.

Entry into and continuation in the Minor requires that the student remains in Good Standing. Where space in courses required for the Minor is limited, students may be required to maintain a sessional average higher than the minimum for Good Standing. Upon successful completion of the Minor program, the notation “Minor in [Subject]” will be denoted on the student’s transcript.

Students might encounter difficulty fitting the courses for the Minor into their program timetable; careful planning is essential, and completion of the Minor program might require an additional term or terms beyond that required to complete the B.A.Sc. degree alone.

No more than 6 upper-level credits that count toward the restricted elective requirements for the B.A.Sc. degree may be double-counted to fulfill requirements for the Science minor.

Note: Students who wish to pursue a Minor in Science should be aware of the prerequisites of many of the upper-level Science courses. Space in many courses is limited. Admission to a science minor does not guarantee access to courses agreed upon for the minor.
To: Senate Curriculum Committee

From: Electrical and Computer Engineering

Date: August 15, 2014 (approved at Engineering Faculty Meeting November 6, 2014)

Re: Change to UBC degree parchment for graduate students in the Faculty of Applied Science in Electrical and Computer Engineering

Background and Rationale:

Senate allows for requests for changes to the parchment when appropriate.

The parchment for Master of Engineering (MEng) degrees obtained by students from the Department of Electrical and Computer Engineering does not indicate the department name. Considering the extremely broad range of disciplines within the Faculty of Applied Science, students have expressed an interest in seeing this information included on the parchment. This would clarify the nature of their studies and be more indicative of a student's professional interests and academic accomplishments.

There are 4 lines available on the parchment, only 1 of which is currently being used. The second line would allow for the field of study to be indicated by way of the department name.

Proposal:

The Department of Electrical and Computer Engineering respectfully requests approval to use two of the available lines on the parchment, as follows:

- Line 1: “Master of Engineering” (unchanged)
- Line 2: Field of Study, “Electrical and Computer Engineering”
| Faculty: Arts | Date: 27 October 2014 |
| Department: HIST | Contact Person: Eagle Glassheim |
| Faculty Approval Date: December 3, 2014 | Phone: 2-4101 |
| Effective Session (W or S): Winter | Email: eagle.g@ubc.ca |
| Effective Academic Year: 2015-16 | |

**Proposed Calendar Entry:**

HIST 408 (3) **U.S. Foreign Relations from Independence to World War II**

U.S. foreign policy and international history. Examines the American rise to power and political, economic, and cultural relationships between the United States and other peoples, organizations, and states worldwide.

**URL:**
http://www.calendar.ubc.ca/vancouver/courses.cfm?page=name&code=HIST

**Present Calendar Entry:**

HIST 408 (3) **American Foreign Policy, 1870 to 1945**

Selected topics in the political and economic aspects of American foreign policy, from 1870 to 1945.

**Type of Action:**

Category 1: Retitling of course, updating of description, and expansion of course content to include the period prior to 1870.

**Rationale for Proposed Change:**

To bring the course description up to date and expand course content, both in accordance with current scholarship. We expect the update to make the course more attractive to students, and to meet better the needs of history majors and majors in the International Relations Program.
| Faculty: Arts | Date: Nov 26, 2014 |
| Department: ANTH | Contact Person: Andrew Martindale |
| Faculty Approval Date: January 7, 2015 | Phone: 22545 |
| Effective Session (W or S): W | Email: andrew.martindale@ubc.ca |
| Effective Academic Year: 2015 | |

**Proposed Calendar Entry:**

ANTH 210 (3) Eating Culture

An anthropological exploration of how the collection, cultivation and consumption of food shapes human society and culture.

**Present Calendar Entry:** N/A

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

**Rationale:** This is one of a series of second year courses designed to introduce non-majors to anthropological research on key aspects of human experience. Eating Culture introduces students to the main frameworks anthropologists employ to understand the place of food in human evolution and historical development, particularly in formation of contemporary social formations and cultural understandings. Students will read ethnographic accounts of food from around the world, examining in particular how globalization and climate change are altering the ways humans procure, distribute and understand food.

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 423 (3) Ethnography of East Africa and the Swahili Coast</td>
</tr>
<tr>
<td>The everyday lives of people who inhabit East Africa and the Swahili Coast, and consideration of slave trade, long distance migration, colonialism, nationalism, independence movements, religion, identity politics, music, gender, sexuality, health, ecotourism and conservation.</td>
</tr>
</tbody>
</table>

**Present Calendar Entry:** n/a

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

**Rationale for Proposed Change:**

The proposed course has been taught for several years under a generic code and the department wishes a dedicated course entry in the calendar. Courses in ethnography are required as part of Anthropology Major and Minor programs and subjects focusing on Africa attract wide student interest. ANTH 423 is designed for students interested in detailed analysis of ethnographic data in the context of global themes.
Faculty: Arts
Department: Dean of Arts
Faculty Approval Date: January 7, 2015
Effective Session (W or S): W
Effective Academic Year: 2015

Date: November 28, 2014
Contact Person: Janet Giltrow
Phone: 23247
Email: janet.giltrow@ubc.ca

Proposed Calendar Entry:

Minor in Education

The Minor in Education allows Bachelor of Arts students to combine Arts subject content with an area of Education through which that content can be more broadly explored and applied. These investigations through the lens of education can lead to career options involving education theory and pedagogy, both for teaching careers and other professional goals. The Minor does not qualify students to teach in the K-12 system; however, it does provide prerequisites to higher education programs and required courses necessary for specialized teacher education.

The Minor consists of 30 credits, 18 of which are drawn from specified core Education courses and 12 of which are drawn from supportive Arts courses at the 300-400 level. Four different versions are available:

i. Special Education
ii. Interpersonal Development
iii. Community, Adult and Higher Education
iv. Early Childhood Education

Students who wish to declare the Minor must be eligible for 3rd year standing. Arts subject courses must be chosen in consultation with Arts Advising, preferably prior to declaration; Arts Advising may consult with the Teacher Education office for final approval of these courses.

Education subject courses consist of the

Rationale: The Minor in Education was jointly created by the Faculty of Education and the Faculty of Arts in response to recognized Arts student interest in integrating Education courses into their Arts studies.

Faculty of Arts students are already selecting many of the Education courses included in this proposal as general electives, for reasons as diverse as preparing for particular teaching specializations, working towards other professional goals, preparing for graduate studies, and exploring personal interests. The addition of the Education Minor would allow these students to declare their Education studies within the B.A. degree structure, and would provide them with an Education Minor articulated on their transcript. Thus, that which now exists informally would be formally organized, allowing for proper course selection and advising in the topic areas, and formally recognized, making it easier for students to demonstrate their interest and background in the area studied. It should be noted that this proposal provides a unique opportunity to UBC students as no other BC university offers a program that allows students to prepare for teaching specializations as part of their pre-Education undergraduate study. Arts students who continue on this path into the Bachelor of Education’s specialized minor programs would graduate already qualified for employment in their
following:

| i. Special Education: EPSE 303, EPSE 312, EPSE 316, EPSE 348, EPSE 436, EPSE 437 |
| ii. Interpersonal Development: CNPS 362, CNPS 363, CNPS 364, CNPS 365, CNPS 427, CNPS 433 |
| iii. Community, Adult and Higher Education: ADHE 327, ADHE 329, ADHE 330, ADHE 412, plus two additional Education courses chosen in consultation with academic advising in the Faculty of Education |
| iv. Early Childhood Education: ECED 380, ECED 405, ECED 406, ECED 407, ECED 420, ECED 421 |

The creation of specific streams within the Minor would expand Arts students’ registration access to include some Education courses not currently available to them (including ECED – Early Childhood Education and EPSE – Educational Psychology and Special Education courses) while also providing a basis for methodical course planning in all four stream areas. These carefully designed career-oriented streams would not only allow Arts students to prepare for careers in high-demand specialist teaching areas, but would also help them to create a foundation upon which they could build a professional path beyond the classroom. For example, they may choose to pursue a career working in such growth sectors as the research, design, and provision of community health care and education, social work and youth services, addictions counselling, special needs and disability care, infant and childhood development, immigrant services, or business training and professional development.

Resource and budget implications: This proposal makes use of existing courses and vacant seats. It has no financial impact, and requires neither changes to fees nor additional instructors and course sections. The Faculty of Education has committed to ensuring that all courses articulated in each stream will continue to be offered and regularly scheduled, with seats reserved for Minor in Education students.

| Proposed Calendar Entry: | Minor in Education |
| URL: n/a | Present Calendar Entry: n/a |
| Type of Action: Create new minor program | Rationale: The Minor in Education was jointly created by the Faculty of Education and the Faculty of Arts in response to |

The Minor in Education allows Bachelor of Fine Arts students to combine Arts subject content with an area of Education through which that content can be more broadly...
explored and applied. These investigations through the lens of education can lead to career options involving education theory and pedagogy, both for teaching careers and other professional goals. The Minor does not qualify students to teach in the K-12 system; however, it does provide prerequisites to higher education programs and required courses necessary for specialized teacher education.

The Minor consists of 30 credits, 18 of which are drawn from specified core Education courses and 12 of which are drawn from supportive Arts courses at the 300-400 level. Four different versions are available:

v. Special Education
vi. Interpersonal Development
vii. Community, Adult and Higher Education
viii. Early Childhood Education

Students who wish to declare the Minor must be eligible for 3rd year standing. Arts subject courses must be chosen in consultation with Arts Advising, preferably prior to declaration; Arts Advising may consult with the Teacher Education office for final approval of these courses.

Education subject courses consist of the following:

v. Special Education: EPSE 303, EPSE 312, EPSE 316, EPSE 348, EPSE 436, EPSE 437
vi. Interpersonal Development: CNPS 362, CNPS 363, CNPS 364, CNPS 365, CNPS 427, CNPS 433
vii. Community, Adult and Higher Education: ADHE 327, ADHE 329, ADHE 330, ADHE 412, plus

recognized Arts student interest in integrating Education courses into their Arts studies.

Faculty of Arts students are already selecting many of the Education courses included in this proposal as general electives, for reasons as diverse as preparing for particular teaching specializations, working towards other professional goals, preparing for graduate studies, and exploring personal interests. The addition of the Education Minor would allow these students to declare their Education studies within the B.F.A. degree structure, and would provide them with an Education Minor articulated on their transcript. Thus, that which now exists informally would be formally organized, allowing for proper course selection and advising in the topic areas, and formally recognized, making it easier for students to demonstrate their interest and background in the area studied. It should be noted that this proposal provides a unique opportunity to UBC students as no other BC university offers a program that allows students to prepare for teaching specializations as part of their pre-Education undergraduate study. Arts students who continue on this path into the Bachelor of Education’s specialized minor programs would graduate already qualified for employment in their area of interest.

The creation of specific streams within the Minor would expand Arts students’ registration access to include some Education courses not currently available to them (including ECED – Early Childhood Education and EPSE – Educational Psychology and Special Education courses) while also providing a basis for methodical course planning in all four stream areas. These carefully designed career-oriented streams would not only
two additional Education courses chosen in consultation with academic advising in the Faculty of Education

viii. Early Childhood Education: ECED 380, ECED 405, ECED 406, ECED 407, ECED 420, ECED 421

allow Arts students to prepare for careers in high-demand specialist teaching areas, but would also help them to create a foundation upon which they could build a professional path beyond the classroom. For example, they may choose to pursue a career working in such growth sectors as the research, design, and provision of community health care and education, social work and youth services, addictions counselling, special needs and disability care, infant and childhood development, immigrant services, or business training and professional development.

Resource and budget implications: This proposal makes use of existing courses and vacant seats. It has no financial impact, and requires neither changes to fees nor additional instructors and course sections. The Faculty of Education has committed to ensuring that all courses articulated in each stream will continue to be offered and regularly scheduled, with seats reserved for Minor in Education students.

**Proposed Calendar Entry:**

Minor in Education

The Minor in Education allows Bachelor of International Economics students to combine Arts subject content with an area of Education through which that content can be more broadly explored and applied. These investigations through the lens of education can lead to career options involving education theory and pedagogy, both for teaching careers and other professional goals. The Minor does not qualify students to teach in the K-12 system; however, it does provide pre-requisites to higher education programs and required courses necessary for specialized teacher education.

The Minor consists of 30 credits, 18 of

**URL:** n/a

**Present Calendar Entry:** n/a

**Type of Action:** Create new minor program

**Rationale:** The Minor in Education was jointly created by the Faculty of Education and the Faculty of Arts in response to recognized Arts student interest in integrating Education courses into their Arts studies.

Faculty of Arts students are already selecting many of the Education courses included in this proposal as general electives, for reasons as diverse as preparing for particular teaching specializations, working towards other professional goals, preparing for graduate studies, and exploring personal interests. The addition of the Education Minor would
which are drawn from specified core Education courses and 12 of which are drawn from supportive Arts courses at the 300-400 level. Four different versions are available:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ix.</td>
<td>Special Education</td>
</tr>
<tr>
<td>x.</td>
<td>Interpersonal Development</td>
</tr>
<tr>
<td>xi.</td>
<td>Community, Adult and Higher Education</td>
</tr>
<tr>
<td>xii.</td>
<td>Early Childhood Education</td>
</tr>
</tbody>
</table>

Students who wish to declare the Minor must be eligible for 3rd year standing. Arts subject courses must be chosen in consultation with Arts Advising, preferably prior to declaration; Arts Advising may consult with the Teacher Education office for final approval of these courses.

Education subject courses consist of the following:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ix.</td>
<td>Special Education: EPSE 303, EPSE 312, EPSE 316, EPSE 348, EPSE 436, EPSE 437</td>
</tr>
<tr>
<td>x.</td>
<td>Interpersonal Development: CNPS 362, CNPS 363, CNPS 364, CNPS 365, CNPS 427, CNPS 433</td>
</tr>
<tr>
<td>xi.</td>
<td>Community, Adult and Higher Education: ADHE 327, ADHE 329, ADHE 330, ADHE 412, plus two additional Education courses chosen in consultation with academic advising in the Faculty of Education</td>
</tr>
<tr>
<td>xii.</td>
<td>Early Childhood Education: ECED 380, ECED 405, ECED 406, ECED 407, ECED 420, ECED 421</td>
</tr>
</tbody>
</table>

allow these students to declare their Education studies within the B.I.E. degree structure, and would provide them with an Education Minor articulated on their transcript. Thus, that which now exists informally would be formally organized, allowing for proper course selection and advising in the topic areas, and formally recognized, making it easier for students to demonstrate their interest and background in the area studied. It should be noted that this proposal provides a unique opportunity to UBC students as no other BC university offers a program that allows students to prepare for teaching specializations as part of their pre-Education undergraduate study. Arts students who continue on this path into the Bachelor of Education’s specialized minor programs would graduate already qualified for employment in their area of interest.

The creation of specific streams within the Minor would expand Arts students’ registration access to include some Education courses not currently available to them (including ECED – Early Childhood Education and EPSE – Educational Psychology and Special Education courses) while also providing a basis for methodical course planning in all four stream areas. These carefully designed career-oriented streams would not only allow Arts students to prepare for careers in high-demand specialist teaching areas, but would also help them to create a foundation upon which they could build a professional path beyond the classroom. For example, they may choose to pursue a career working in such growth sectors as the research, design, and provision of community health care and education, social work and youth services, addictions counselling, special needs and disability care, infant and childhood development, immigrant services, or business training.
and professional development.

Resource and budget implications: This proposal makes use of existing courses and vacant seats. It has no financial impact, and requires neither changes to fees nor additional instructors and course sections. The Faculty of Education has committed to ensuring that all courses articulated in each stream will continue to be offered and regularly scheduled, with seats reserved for Minor in Education students.

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th>URL: n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor in Education</td>
<td>Present Calendar Entry: n/a</td>
</tr>
<tr>
<td>The Minor in Education allows Bachelor of Media Studies students to combine Arts subject content with an area of Education through which that content can be more broadly explored and applied. These investigations through the lens of education can lead to career options involving education theory and pedagogy, both for teaching careers and other professional goals. The Minor does not qualify students to teach in the K-12 system; however, it does provide pre-requisites to higher education programs and required courses necessary for specialized teacher education.</td>
<td>Type of Action: Create new minor program</td>
</tr>
<tr>
<td>The Minor consists of 30 credits, 18 of which are drawn from specified core Education courses and 12 of which are drawn from supportive Arts courses at the 300-400 level. Four different versions are available:</td>
<td>Rationale: The Minor in Education was jointly created by the Faculty of Education and the Faculty of Arts in response to recognized Arts student interest in integrating Education courses into their Arts studies.</td>
</tr>
<tr>
<td>xiii. Special Education</td>
<td>Faculty of Arts students are already selecting many of the Education courses included in this proposal as general electives, for reasons as diverse as preparing for particular teaching specializations, working towards other professional goals, preparing for graduate studies, and exploring personal interests.</td>
</tr>
<tr>
<td>xiv. Interpersonal Development</td>
<td>The addition of the Education Minor would allow these students to declare their Education studies within the B.M.S. degree structure, and would provide them with an Education Minor articulated on their transcript. Thus, that which now exists informally would be formally organized, allowing for proper course selection and advising in the topic areas, and formally recognized, making it easier for students to demonstrate their interest and background in the area studied. It should be noted that this proposal provides a unique opportunity to UBC students as no other BC university</td>
</tr>
<tr>
<td>xv. Community, Adult and Higher Education</td>
<td></td>
</tr>
<tr>
<td>xvi. Early Childhood Education</td>
<td></td>
</tr>
<tr>
<td>Students who wish to declare the Minor must be eligible for 3rd year standing. Arts</td>
<td></td>
</tr>
</tbody>
</table>
subject courses must be chosen in consultation with Arts Advising, preferably prior to declaration; Arts Advising may consult with the Teacher Education office for final approval of these courses.

Education subject courses consist of the following:

xiii. Special Education: EPSE 303, EPSE 312, EPSE 316, EPSE 348, EPSE 436, EPSE 437
xiv. Interpersonal Development: CNPS 362, CNPS 363, CNPS 364, CNPS 365, CNPS 427, CNPS 433

xv. Community, Adult and Higher Education: ADHE 327, ADHE 329, ADHE 330, ADHE 412, plus two additional Education courses chosen in consultation with academic advising in the Faculty of Education

xvi. Early Childhood Education: ECED 380, ECED 405, ECED 406, ECED 407, ECED 420, ECED 421

offers a program that allows students to prepare for teaching specializations as part of their pre-Education undergraduate study. Arts students who continue on this path into the Bachelor of Education’s specialized minor programs would graduate already qualified for employment in their area of interest.

The creation of specific streams within the Minor would expand Arts students’ registration access to include some Education courses not currently available to them (including ECED – Early Childhood Education and EPSE – Educational Psychology and Special Education courses) while also providing a basis for methodical course planning in all four stream areas. These carefully designed career-oriented streams would not only allow Arts students to prepare for careers in high-demand specialist teaching areas, but would also help them to create a foundation upon which they could build a professional path beyond the classroom. For example, they may choose to pursue a career working in such growth sectors as the research, design, and provision of community health care and education, social work and youth services, addictions counselling, special needs and disability care, infant and childhood development, immigrant services, or business training and professional development.

Resource and budget implications: This proposal makes use of existing courses and vacant seats. It has no financial impact, and requires neither changes to fees nor additional instructors and course sections. The Faculty of Education has committed to ensuring that all courses articulated in each stream will continue to be offered and regularly scheduled, with seats reserved for Minor in Education students.
**Proposed Calendar Entry:**

Minor in Education

The Minor in Education allows Bachelor of Music students to combine Arts subject content with an area of Education through which that content can be more broadly explored and applied. These investigations through the lens of education can lead to career options involving education theory and pedagogy, both for teaching careers and other professional goals. The Minor in Education provides pre-requisites to higher education programs and required courses necessary for specialized teacher education.

This Minor does not qualify students to teach in the K-12 system; students with this interest should either (a) enrol in the Dual Degree in Music and Education, or (b) enrol in the B.Ed. program after completing the B.Mus. degree.

The Minor in Education consists of 30 credits, 18 of which are drawn from specified core Education courses and 12 of which are drawn from supportive Arts courses at the 300-400 level. Four different versions are available:

- i. Special Education
- ii. Interpersonal Development
- iii. Community, Adult and Higher Education
- iv. Early Childhood Education

The Education subject courses for each option are listed further below.

Students who wish to declare the Minor must be eligible for 3rd year standing and must meet with Music Advising prior to third-year registration for approval of the 12 credits of supportive Arts courses. No more than 6 of the 12 Arts credits may also

**Present Calendar Entry:** n/a

**Type of Action:** Create new minor program

**Rationale:** The Minor in Education was jointly created by the Faculty of Education and the Faculty of Arts in response to recognized Arts student interest in integrating Education courses into their Arts studies.

Faculty of Arts students are already selecting many of the Education courses included in this proposal as general electives, for reasons as diverse as preparing for particular teaching specializations, working towards other professional goals, preparing for graduate studies, and exploring personal interests. The addition of the Education Minor would allow these students to declare their Education studies within the B.Mus. degree structure, and would provide them with an Education Minor articulated on their transcript. Thus, that which now exists informally would be formally organized, allowing for proper course selection and advising in the topic areas, and formally recognized, making it easier for students to demonstrate their interest and background in the area studied. It should be noted that this proposal provides a unique opportunity to UBC students as no other BC university offers a program that allows students to prepare for teaching specializations as part of their pre-Education undergraduate study. Arts students who continue on this path into the Bachelor of Education’s specialized minor programs would graduate already qualified for employment in their area of interest.

The creation of specific streams within the Minor would expand Arts students’ registration access to include some Education courses not currently available.
be counted toward the B.Mus. major, and not all MUSC courses will satisfy this requirement. Music Advising may consult with Arts Advising and the Teacher Education office for final approval of the supportive Arts courses.

Education subject courses consist of the following:

xvii. Special Education: EPSE 303, EPSE 312, EPSE 316, EPSE 348, EPSE 436, EPSE 437

xviii. Interpersonal Development: CNPS 362, CNPS 363, CNPS 364, CNPS 365, CNPS 427, CNPS 433

xix. Community, Adult and Higher Education: ADHE 327, ADHE 329, ADHE 330, ADHE 412, plus two additional Education courses chosen in consultation with academic advising in the Faculty of Education

xx. Early Childhood Education: ECED 380, ECED 405, ECED 406, ECED 407, ECED 420, ECED 421

Resource and budget implications: This proposal makes use of existing courses and vacant seats. It has no financial impact, and requires neither changes to fees nor additional instructors and course sections. The Faculty of Education has committed to ensuring that all courses articulated in each stream will continue to be offered and regularly scheduled, with seats reserved for Minor in Education students.

**ENGL – Category 1**

**Faculty:** Arts  
**Department:** ENGL  
**Faculty Approval Date:** January 7, 2015  
**Effective Session:** W  
**Effective Academic Year:** 2015  
**Date:** 24 November 2014  
**Contact Persons:** L. Brinton  
**Phone:** 2-4461  
**Email:** brinton@mail.ubc.ca

**Present Calendar Entry:** N/A  
**Type of Action:** Create new course  
**Rationale:**  
This elective course for Majors and non-Majors examines a broad range of commonly held beliefs about language, and assesses the evidence or lack thereof in support of these
and cognition, learning, society, change and evolution.

**Equivalency:** LING 140

**Note:** This is an elective course that does not fulfill writing requirements in any faculty or the literature requirement in the Faculty of Arts.

The course will be cross-listed and team-taught by instructors (one each) from the Departments of English and Linguistics in order to cover the range of perspectives and methodologies that may contribute to putting these beliefs into clear perspective.

The course adds breadth to the first-year curricula of both departments and addresses topics that in some cases are simply interesting, but in others are based on potentially dangerous misconceptions – for example, “learning one language reduces the capacity to learn others.” Because these beliefs are so widespread and often well known to students before they arrive at University, they are inherently accessible to younger students of many backgrounds and interests. This is expected to translate into increased enrolments and broader appeal to prospective majors in both Departments.

Although English and Linguistics have offered courses fulfilling each other’s Major requirements, the proposed Language Myths course underscores the importance of multidisciplinary approaches to understanding language structure and use, and marks the first pedagogical collaboration ever between the two Departments.

---

| Faculty: | Arts |
| Department: | FNEL |
| Faculty Approval Date: | January 7, 2015 |
| Effective Session (W or S): | W |
| Effective Academic Year: | 2015 |

**Present Calendar Entry:** n/a

**Type of Action:** Create new course

**Rationale:**

FNEL 180 is a new foundational survey course that introduces students to the field of endangered language documentation, conservation and revitalization.

Responding to student interest, FNEL 180 serves as part of the core curriculum of the
<table>
<thead>
<tr>
<th>loss, retention, and revival. Introducing strategies and practical methodologies for collaborative, interdisciplinary, community-based documentation and revitalization projects for First Nations and Indigenous languages.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Nations and Endangered Languages Program, and draws directly on the expertise of our two new academic appointments.</td>
</tr>
<tr>
<td>Given UBC’s commitment to indigenizing the curriculum and the local and global importance of the potential loss of diversity, identity, and traditional knowledge entailed by the fragility of Indigenous languages. (cf. <em>UBC Aboriginal Strategic Plan 2008 §5.4</em>), FNEL 180 will serve students across the university in different programs and academic streams.</td>
</tr>
<tr>
<td><em>Wider rationale for development of FNEL courses:</em></td>
</tr>
<tr>
<td>A nuanced understanding of First Nations issues lies at the core of UBC’s commitment to Aboriginal and indigenous issues. This vision is clearly articulated in the University’s 2008 Aboriginal Strategic Plan.</td>
</tr>
<tr>
<td>Section 5.4 of the Aboriginal Strategic Plan relating to Research strategy notes that ‘The stabilization, documentation, and recovery of Aboriginal languages are often cited as among the most important priorities for communities. UBC should continue to develop its contributions in this area in both research and instruction, wherever possible.’</td>
</tr>
<tr>
<td>Section 7.1 of the Aboriginal Strategic Plan, on Community Relations, highlights the critical fact that ‘UBC must continue to develop and support its relationships with the Musqueam Indian Band and ... develop new programs.’</td>
</tr>
<tr>
<td>An enriched set of course offerings in First Nations and Endangered Languages is a tangible implementation of both of these action points, reflecting a growing student interest in our program and deepening relations with our community partners at Musqueam and the region.</td>
</tr>
</tbody>
</table>
**Note:** The First Nations and Endangered Languages Program (FNEL) is the new name for the interdisciplinary academic program currently known as the First Nations Languages Program (FNLG). The name change was approved earlier this year at the Faculty of Arts Council Meeting and is now pending Senate approval.

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th>Present Calendar Entry:</th>
<th>Type of Action:</th>
<th>Rationale:</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNEL 282 (3) The Structures of Endangered Languages: Conservation and Revitalization</td>
<td>n/a</td>
<td>Create new course</td>
<td>Currently being piloted as FNLG 448W, FNEL 282 explores the structures of words, sentences and connected speech in the Indigenous languages of British Columbia in order to prepare students to carry out their own community-based documentation, conservation and revitalization projects with endangered languages. Responding to student interest, FNEL 282 serves as part of the core curriculum of the First Nations and Endangered Languages Program, and draws directly on the expertise of our two new academic appointments. Given UBC’s commitment to indigenizing the curriculum and the local and global importance of the potential loss of diversity, identity, and traditional knowledge entailed by the fragility of Indigenous languages. (cf. <em>UBC Aboriginal Strategic Plan 2008 §5.4</em>), FNEL 282 will serve students across the university in different programs and academic streams.</td>
</tr>
<tr>
<td>Development of skills in the documentation, transcription and analysis of grammatical structures in endangered languages, focusing on the diversity within BC Aboriginal languages. Applied techniques in documentation, workflow and multi-media digital annotation, guided by community-based ethical protocols and conservation/revitalization goals.</td>
<td></td>
<td></td>
<td>A nuanced understanding of First Nations issues lies at the core of UBC’s commitment to Aboriginal and indigenous issues. This vision is clearly articulated in the University’s 2008 Aboriginal Strategic Plan.</td>
</tr>
</tbody>
</table>
Section 5.4 of the Aboriginal Strategic Plan relating to Research strategy notes that ‘The stabilization, documentation, and recovery of Aboriginal languages are often cited as among the most important priorities for communities. UBC should continue to develop its contributions in this area in both research and instruction, wherever possible.’

Section 7.1 of the Aboriginal Strategic Plan, on Community Relations, highlights the critical fact that ‘UBC must continue to develop and support its relationships with the Musqueam Indian Band and ... develop new programs.’

An enriched set of course offerings in First Nations and Endangered Languages is a tangible implementation of both of these action points, reflecting a growing student interest in our program and deepening relations with our community partners at Musqueam and the region.

**Note:** The First Nations and Endangered Languages Program (FNEL) is the new name for the interdisciplinary academic program currently known as the First Nations Languages Program (FNLG). The name change was approved earlier this year at the Faculty of Arts Council Meeting and is now pending Senate approval.

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th>Present Calendar Entry: n/a</th>
<th>Type of Action: Create new course</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNEL 380 (3) Technologies for Endangered Language Documentation and Revitalization</td>
<td><strong>Rationale:</strong> Currently being piloted as FNLG 448T, FNEL 380 explores the analogue and digital tools and technologies that are increasingly important components in community-based language documentation, conservation and revitalization projects. Learning about and understanding the practical and ethical implications of selecting one tool over another lies at the core of this course. Such</td>
<td></td>
</tr>
</tbody>
</table>
| Audio, video and still photography, data management, archiving and web publishing. | Skills are increasingly central to successful collaborations that build capacity among and within speech communities.  

Responding to student interest, FNEL 380 serves as part of the core curriculum of the First Nations and Endangered Languages Program, and draws directly on the expertise of our two new academic appointments.  

Given UBC’s commitment to indigenizing the curriculum and the local and global importance of the potential loss of diversity, identity, and traditional knowledge entailed by the fragility of Indigenous languages. (cf. *UBC Aboriginal Strategic Plan 2008 §5.4*), FNEL 380 will serve students across the university in different programs and academic streams.  

**Wider rationale for development of FNEL courses:**  

A nuanced understanding of First Nations issues lies at the core of UBC’s commitment to Aboriginal and indigenous issues. This vision is clearly articulated in the University’s 2008 Aboriginal Strategic Plan.  

Section 5.4 of the Aboriginal Strategic Plan relating to Research strategy notes that ‘The stabilization, documentation, and recovery of Aboriginal languages are often cited as among the most important priorities for communities. UBC should continue to develop its contributions in this area in both research and instruction, wherever possible.’  

Section 7.1 of the Aboriginal Strategic Plan, on Community Relations, highlights the critical fact that ‘UBC must continue to develop and support its relationships with the Musqueam Indian Band and ... develop new programs.’  

An enriched set of course offerings in First
Nations and Endangered Languages is a tangible implementation of both of these action points, reflecting a growing student interest in our program and deepening relations with our community partners at Musqueam and the region.

**Note:** This course was sent out for consultation and review as FNLG 180 earlier this year and approved by all units that were consulted. It has been revised in accordance with constructive feedback received from the Arts Curriculum Committee.

**Note:** The First Nations and Endangered Languages Program (FNEL) is the new name for the interdisciplinary academic program currently known as the First Nations Languages Program (FNLG). The name change was approved earlier this year at the Faculty of Arts Council Meeting and is now pending Senate approval.

<table>
<thead>
<tr>
<th>LING – Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Faculty:</strong> Arts</td>
</tr>
<tr>
<td><strong>Department:</strong> LING</td>
</tr>
<tr>
<td><strong>Faculty Approval Date:</strong> Jan. 7, 2015</td>
</tr>
<tr>
<td><strong>Effective Session (W or S):</strong> W</td>
</tr>
<tr>
<td><strong>Effective Academic Year:</strong> 2015</td>
</tr>
<tr>
<td><strong>Date:</strong> 24 November 2014</td>
</tr>
<tr>
<td><strong>Contact Persons:</strong> E. Vatikiotis-Bateson</td>
</tr>
<tr>
<td><strong>Phone:</strong> 7-5468</td>
</tr>
<tr>
<td><strong>Email:</strong> <a href="mailto:evb@mail.ubc.ca">evb@mail.ubc.ca</a></td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

LING 140 (3) Challenging Language Myths

Critical consideration of a broad range of commonly held beliefs about language and its relation to the brain and cognition, learning, society, change and evolution.

**Equivalency:** ENGL 140

**Note.** This is an elective course that does not fulfill writing requirements in any faculty or the literature requirement in the Faculty of Arts.

**Present Calendar Entry:** N/A

**Type of Action:** Create new course

**Rationale:**

This elective course for Majors and non-Majors examines a broad range of commonly held beliefs about language, and assesses the evidence or lack thereof in support of these beliefs (“myths”).

The course will be cross-listed and team-taught by instructors (one each) from the Departments of English and Linguistics in order to cover the range of perspectives and methodologies that may contribute to putting these beliefs into clear perspective.

The course adds breadth to the first-year curricula of both departments and addresses topics that in some cases are simply
interesting, but in others are based on potentially dangerous misconceptions – for example, “learning one language reduces the capacity to learn others.” Because these beliefs are so widespread and often well known to students before they arrive at University, they are inherently accessible to younger students of many backgrounds and interests. This is expected to translate into increased enrolments and broader appeal to prospective majors in both Departments.

Although English and Linguistics have offered courses fulfilling each other’s Major requirements, the proposed Language Myths course underscores the importance of multidisciplinary approaches to understanding language structure and use, and marks the first pedagogical collaboration ever between the two Departments.

**PSYC – Category 1**

**Faculty:** Arts  
**Department:** PSYC  
**Faculty Approval Date:** January 7, 2015  
**Effective Session (W or S):** W  
**Effective Academic Year:** 15

**Date:** 17 November 2014  
**Contact Person:** Catherine Rawn  
**Phone:** 604-822-2513  
**Email:** cdrawn@psych.ubc.ca

**Present Calendar Entry:** N/A  
**Type of Action:** Create new course.

**Rationale for Proposed Change:**
In February 2013, the British Columbia Lottery Corporation awarded UBC a $2 million dollar grant to establish a Centre for Gambling Research. With these funds, we were able to recruit a world-class gambling researcher to head up the Centre. Integral to his mission is not only world-class research, but also creating undergraduate courses that could spur interest and undergraduate involvement in this work.

Given how prevalent problem gambling is in Canada and many other places in the world, coupled with other real-world applications for understanding the decision-making processes involved (e.g. applications for stock market trading), this

**Proposed Calendar Entry:**

**PSYC 335 (3) Gambling and Decision Making**

The psychology of gambling behaviour, with emphasis on relevant work from judgment and decision-making, the cognitive neuroscience of choice, and clinical perspectives on disordered gambling.

**Prerequisite:** Either (a) PSYC 100 or (b) all of PSYC 101, PSYC 102.
course will provide a powerful interdisciplinary opportunity for students.

Anecdotally, there is growing interest among students in courses that apply Psychology to problems in society and in everyday life. This is consistent with trends in the discipline itself, and is reflected in the focus in this course on how psychological principles can inform public policy around gambling, treatment of problem gambling, and public perceptions of gambling.
Beginning in September 2015, the Faculty of Dentistry will be phasing in a revised curriculum for the Doctor of Dental Medicine (DMD) degree program. During the transitional years in which the new curriculum structure is being phased-in, the previous curriculum structure will be phased-out, year-by-year. Regardless of the year in which students entered the program, graduates of the DMD program must meet the same degree requirements. Students who may experience a disruption in their studies (e.g. extended absences, medical leaves, withdrawals, failure) may not be able to complete the degree requirements and courses as described in the Academic Calendar the year they were admitted to the DMD program as some courses will no longer be offered in the DMD program. Each student’s circumstance will be different and will be reviewed on a case-by-case basis with the Associate Dean, Academic Affairs. A combination
of completed curriculum and new curriculum offerings will be used to satisfy the degree requirements set out in this Academic Calendar in the DMD degree program requirements section. Every reasonable effort will be made to accommodate the student’s completion of the degree requirements within a reasonable duration of study.

Regular attendance is expected of students in all their classes (including lectures, laboratories, tutorials, seminars and clinics)....

... 

Type of Action:
Update to Faculty of Dentistry Academic Regulations section.

Rationale for Proposed Change:
Addressing attendance and prolonged absences during the transition year to a new curriculum.

Regular attendance is expected of students in all their classes (including lectures, laboratories, tutorials, seminars and clinics)....

...
<table>
<thead>
<tr>
<th>Category: (1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Faculty:</strong> Education</td>
<td><strong>Date:</strong> September 10, 2014</td>
</tr>
<tr>
<td><strong>Department:</strong> Institute for Early Childhood Education and Research</td>
<td><strong>Contact Person:</strong> Dr. Iris Berger</td>
</tr>
<tr>
<td><strong>Faculty Approval Date:</strong> Nov. 18, 2014</td>
<td><strong>Phone:</strong> 2 - 6593</td>
</tr>
<tr>
<td><strong>Effective Session (W or S):</strong> S</td>
<td><strong>Email:</strong> <a href="mailto:iris.berger@ubc.ca">iris.berger@ubc.ca</a></td>
</tr>
<tr>
<td><strong>Effective Academic Year:</strong> 2015</td>
<td></td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

ECED 400 (3) Introduction to Early Childhood Education and Care

**Present Calendar Entry:** - n/a

**Type of Action:** create new course

**Rationale for Proposed Change:**

Contemporary approaches to early years education integrate early learning and care, reflecting research that shows that children’s well-being and learning are interrelated. Early Childhood Education and Care (ECEC) reflects this important shift. At present, ECED courses at UBC are more focused on curriculum and instruction, and an introductory level course that integrates education and care is needed. This course will fulfill some of the requirements for certification as an Early Childhood Educator (ECE) in BC and other provinces. At present, UBC students wanting ECE certification must take a course such as this elsewhere. As a UBC advanced undergraduate course, it will provide students with a high quality, research-based content. This course may be taken by students within the Faculty of Education, and also those in the proposed Early Childhood Education minor for the BA.

**Proposed Calendar Entry:**

ECED 401 (3) Supporting Young Children’s Health and Well-Being in Early Childhood Settings

**Present Calendar Entry:** - n/a

**Type of Action:** create new course

**Rationale for Proposed Change:**

This new course adds a new dimension to the study of early education and care. It complements the topics addressed in existing ECED courses by addressing the important topic of young children’s health and well-being more directly. The course will improve the educational experience of students in the field of early education and
care because they will explore contemporary theory, research, and practices pertaining to the maintenance and elevation of the well-being of young children in educational contexts and beyond. This course will fulfill some of the requirements for certification as an Early Childhood Educator (ECE) in BC and other provinces. At present, UBC students wanting ECE certification must take a course such as this elsewhere. As a UBC advanced undergraduate course, it will provide students with a high quality, research-based content. This course may be taken by students within the Faculty of Education, and also those in the proposed Early Childhood Education minor for the BA.

**Proposed Calendar Entry:**

ECED 442 (3) Supporting Indigenous Infants and Young Children within the Context of Their Communities

**Present Calendar Entry:** - n/a

**Type of Action:** create new course

**Rationale for Proposed Change:**

The proposed new course addresses a gap in the educational needs of UBC students who wish to work, or are currently working, with Indigenous infants and young children, including Indigenous infants and young children with special needs, within their communities. The course provides students with knowledge that has so far been unavailable in ECED courses because it focuses primarily on Indigenous perspectives on early childhood development and family support related to working with First Nations, Métis and Inuit families in Canada, and especially in BC. This course meets the goals of the Faculty of Education Strategic Plan to increase the inclusion of Indigenous Knowledge (IK) in undergraduate programs. The course will be an elective in the Infant Development and Supported Child Development (IDSC) Diploma, as well as in the Early Years Diploma (EYED). The course will also be of interest for students in First Nations Studies.
## UBC Curriculum Proposal Form
### Change to Course or Program

<table>
<thead>
<tr>
<th>Faculty:</th>
<th>Applied Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department:</td>
<td>EECE</td>
</tr>
<tr>
<td>Faculty Approval Date:</td>
<td>Nov. 6, 2014</td>
</tr>
<tr>
<td>Effective Session (W or S):</td>
<td>W1</td>
</tr>
<tr>
<td>Effective Academic Year:</td>
<td>2015</td>
</tr>
</tbody>
</table>

**Date:** 9/22/2014  
**Contact Person:** Sudip Shekhar  
**Phone:** 604.827.2218  
**Email:** sudip@ece.ubc.ca

### Proposed Calendar Entry:

- **EECE 587 (3) Radio-Frequency Integrated Circuits**
  - RLC matching networks, general noise theory, radio transmitter and receiver architectures, low-noise amplifiers, mixers, voltage controlled oscillators, power amplifiers.
  - Pre-requisite: One of EECE269, EECE359, EECE369  
  - Co-requisite: EECE488

**Present Calendar Entry:** N/A

**Type of Action:** Create new course

**Rationale for Proposed Change:**
This course has already been offered as EECE 571 (Special Topics) in succession for two years. It can be made a permanent offering now. See supporting document for rationale for co-listing as a graduate course (same as in 2013).
**UBC Curriculum Proposal Form**  
**Change to Course or Program**

<table>
<thead>
<tr>
<th>Category:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Faculty:</strong></td>
<td>Applied Science</td>
</tr>
<tr>
<td><strong>Department:</strong></td>
<td>EECE</td>
</tr>
<tr>
<td><strong>Faculty Approval Date:</strong></td>
<td>Nov. 6, 2014</td>
</tr>
<tr>
<td><strong>Effective Session (W or S):</strong></td>
<td>W1</td>
</tr>
<tr>
<td><strong>Effective Academic Year:</strong></td>
<td>2015</td>
</tr>
<tr>
<td><strong>Date:</strong></td>
<td>September 15, 2014</td>
</tr>
<tr>
<td><strong>Contact Person:</strong></td>
<td>Lukas Chrostowski</td>
</tr>
<tr>
<td><strong>Phone:</strong></td>
<td>604 822 0507</td>
</tr>
<tr>
<td><strong>Email:</strong></td>
<td><a href="mailto:lukasc@ece.ubc.ca">lukasc@ece.ubc.ca</a></td>
</tr>
</tbody>
</table>

### Proposed Calendar Entry:

EECE 593 (3) Active Silicon Photonics Design  
*Prerequisite: EECE 584*

### Present Calendar Entry:

N/A

### Type of Action:

Create new course

### Rationale for Proposed Change:

This course has been offered as a “Seminar and Special Problems” course, EECE571Q, for two years. This proposal is to turn this into a regular course.
To: Senate Curriculum Committee

From: Electrical and Computer Engineering, Faculty of Applied Science

Date: August 15, 2014 (approved at Engineering Faculty Meeting on Nov. 6, 2014)

Re: Change to UBC degree parchment for graduate students in the Faculty of Applied Science in Electrical and Computer Engineering

Background and Rationale:

Senate allows for requests for changes to the parchment when appropriate.

The parchment for MASc degrees obtained by students from the Department of Electrical and Computer Engineering does not indicate the department name. Considering the extremely broad range of disciplines within the Faculty of Applied Science, students have expressed an interest in seeing this information included on the parchment. This would clarify the nature of their studies and be more indicative of a student’s professional and research interests and accomplishments.

There are 4 lines available on the parchment, only 1 of which is currently being used. The second line would allow for the field of study to be indicated by way of the department name.

Proposal:

The Department of Electrical and Computer Engineering respectfully requests approval to use two of the available lines on the parchment, as follows:

- Line 1: “Master of Applied Science” (unchanged)
- Line 2: Field of Study, “Electrical and Computer Engineering”
To: Senate Curriculum Committee

From: Electrical and Computer Engineering, Faculty of Applied Science

Date: August 15, 2014 (approved at Engineering Faculty Meeting on Nov. 6, 2014)

Re: Change to UBC degree parchment for graduate students in the Faculty of Applied Science in Electrical and Computer Engineering

Background and Rationale:

Senate allows for requests for changes to the parchment when appropriate.

The parchment for PhD degrees obtained by students from the Department of Electrical and Computer Engineering does not indicate the department name. Considering the extremely broad range of disciplines within the Faculty of Applied Science, students have expressed an interest in seeing this information included on the parchment. This would clarify the nature of their studies and be more indicative of a student’s professional and research interests and accomplishments.

There are 4 lines available on the parchment, only 1 of which is currently being used. The second line would allow for the field of study to be indicated by way of the department name.

Proposal:

The Department of Electrical and Computer Engineering respectfully requests approval to use two of the available lines on the parchment, as follows:

- Line 1: “Doctor of Philosophy” (unchanged)
- Line 2: Field of Study, “Electrical and Computer Engineering”
### UBC Curriculum Proposal Form

**Change to Course or Program**

<table>
<thead>
<tr>
<th>Faculty:</th>
<th>Applied Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department:</td>
<td>SALA</td>
</tr>
<tr>
<td>Faculty Approval Date:</td>
<td>Oct 29, 2014</td>
</tr>
<tr>
<td>Effective Session (W or S):</td>
<td>W</td>
</tr>
<tr>
<td>Effective Academic Year:</td>
<td>2014/15</td>
</tr>
<tr>
<td>Date:</td>
<td>Nov 13, 2014</td>
</tr>
<tr>
<td>Contact Person:</td>
<td>Luke Parkinson</td>
</tr>
<tr>
<td>Phone:</td>
<td>604 368 7568</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:luke.parkinson@ubc.ca">luke.parkinson@ubc.ca</a></td>
</tr>
<tr>
<td>Proposed Calendar Entry:</td>
<td>LARC 553 (3) Green Network Planning</td>
</tr>
<tr>
<td>Present Calendar Entry:</td>
<td>N/A</td>
</tr>
<tr>
<td>Type of Action:</td>
<td>Create New course.</td>
</tr>
<tr>
<td>Rationale for Proposed Change:</td>
<td>LARC 553 will be offered as an elective course for the Master of Landscape Architecture students. The course content is very relevant to this degree program and currently there is no course in Landscape Architecture which covers this content. This course will be cross-listed with LARC 444.</td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

LARC 553 (3) Green Network Planning  
Theory and methods of long-range green space planning for urban areas. Credit will not be given for both LARC 444 and LARC 553.  
*This course is not eligible for Credit/D/Fail grading.*
# UBC Curriculum Proposal Form

## Change to Course or Program

<table>
<thead>
<tr>
<th>Category: (1)</th>
<th>Date: November 12, 2014</th>
<th>URL: <a href="http://www.calendar.ubc.ca/vancouver/courses.cfm?page=name&amp;code=LARC">http://www.calendar.ubc.ca/vancouver/courses.cfm?page=name&amp;code=LARC</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty: Applied Science</td>
<td>Contact Person: Luke Parkinson</td>
<td>Present Calendar Entry:</td>
</tr>
<tr>
<td>Department: SALA</td>
<td>Phone: 604 822 0205</td>
<td>LARC 59S (6) Graduate Project Development</td>
</tr>
<tr>
<td>Faculty Approval Date: October 29, 2014</td>
<td>Email: <a href="mailto:luke.parkinson@ubc.ca">luke.parkinson@ubc.ca</a></td>
<td>Preparation of a graduation design project proposal including literature review. This course is not eligible for Credit/D/Fail grading. Prerequisite: LARC 525.</td>
</tr>
<tr>
<td>Effective Session (W or S): W1</td>
<td>Effective Academic Year: 2015/16</td>
<td>Type of Action:</td>
</tr>
<tr>
<td>Effective Session: W1</td>
<td></td>
<td>Reduce credits from 6 to 3. Change course number. Change course name.</td>
</tr>
</tbody>
</table>

### Proposed Calendar Entry:

**LARC 590 (3) Graduate Project Part I**  
Preparation of a graduation design project proposal including literature review. *This course is not eligible for Credit/D/Fail grading. Prerequisite: LARC 525.*

### Rationale for Proposed Change:

1. Course number is changing to accommodate a broader structural change of course numbering school-wide. The curriculum change proposal for school-wide course re-numbering is forthcoming. Because this course had to be changed per item 2 below, we felt it was best to include the course re-numbering with this curriculum change.
2. This course is the background research and proposal writing phase of the terminal graduate project. It is offered as a seminar style course. Contact hours for the course will be changed to 3 per week and the workload is consistent with a 3 credit graduate seminar. The new Dual Degree option (with M. Arch.) requires a single, interdisciplinary graduate project, thus requires consistency with the equivalent ARCH course (ARCH 548).
**UBC Admissions Proposal Form**

**Category (1)**

<table>
<thead>
<tr>
<th>Faculty:</th>
<th>Applied Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department:</td>
<td>SALA</td>
</tr>
<tr>
<td>Faculty Approval Date:</td>
<td>October 29, 2014</td>
</tr>
<tr>
<td>Effective Session:</td>
<td>W1</td>
</tr>
<tr>
<td>Year for Change:</td>
<td>2014/15</td>
</tr>
</tbody>
</table>

| Date: | October 28, 2014 |
| Contact Person: | Luke Parkinson |
| Phone: | 604 822 0205 |
| Email: | luke.parkinson@ubc.ca |

**Proposed Calendar Entry:**

**Degree Requirements**

The Master of Landscape Architecture (M.L.A.) degree is designed for candidates seeking admission to the profession. Full-time students normally complete this program in three years. The master’s degree is awarded upon the completion of 110 credits of work, including a major graduating project. All students are required to take a total of 18 elective credits.

Students with a UBC-recognized undergraduate degree in Architecture, Environmental Design, or Landscape Architecture may be eligible to qualify for advanced standing in the Master of Landscape Architecture. Qualification for advanced standing will be established at the time of admission by the Program and applicants will be notified of advanced standing concurrent with admission to the Program. This variant is comprised of approximately two years plus one term of courses, including all courses required for professional degree accreditation by the Canadian Society of Landscape Architects. The minimum requirement for award of the M.L.A. is 80 credits within the program. The particular course requirements will be determined by the graduate advisor upon matriculation, and will be based on transcripts, experience and a portfolio review.

**Present Calendar Entry:**

**Degree Requirements**

The Master of Landscape Architecture (M.L.A.) degree is designed for candidates seeking admission to the profession. Full-time students normally complete this program in three years. The master’s degree is awarded upon the completion of 110 credits of work, including a major graduating project. The core curriculum includes a structured first year of 39 credits and 56 additional required credits in years two and three. All students are required to take a total of 15 elective credits. At least 9 of the 15 credits must be Landscape Architecture (LARC) courses.

Students with a UBC-recognized undergraduate degree in Architecture, Environmental Design, or Landscape Architecture may apply for admission to a minimum 72-credit variant of the professional M.L.A. Program. Depending on background, students may be required to complete up to 80 credits of academic work. All students seeking this variant must contact an advisor upon acceptance into the M.L.A. program. This variant is comprised of approximately two years of M.L.A. design studio courses, as well as courses required for professional degree accreditation by the Canadian Society of Landscape Architects. The particular course requirements will be determined by the graduate advisor for each student upon
acceptance and entry into the program, based on prior experience and a portfolio review.

**Type of Action:**
1. Modify admissions variant from a minimum of 72 credits to a minimum of 80 credits for those with a UBC-recognized degree in Architecture, Environmental Design or Landscape Architecture. Modify the calendar entry under degree requirements.
2. The require course LARC 595 (LARC 590 new number) is being reduced from 6 credits to 3 credits (See related Category 2 proposal). The 3 credit balance will go to elective credits.

**Rationale:**
1. Current entry is out of date and proposed changes bring the calendar in line with current practice. No advanced standing student has been allowed under 80 credits for over 5 years.
2. See rationale on related Category 2 change proposal.
UBC Curriculum Proposal Form
Change to Course or Program

<table>
<thead>
<tr>
<th>Category: (1)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Faculty: Arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: JRNL</td>
</tr>
<tr>
<td>Faculty Approval Date: December 3, 2014</td>
</tr>
<tr>
<td>Effective Session (W or S): S</td>
</tr>
<tr>
<td>Effective Academic Year: 2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date: November 21, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Person: Peter Klein</td>
</tr>
<tr>
<td>Phone: 604 822 1513</td>
</tr>
<tr>
<td>Email: <a href="mailto:peter.klein@ubc.ca">peter.klein@ubc.ca</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
</tr>
</thead>
<tbody>
<tr>
<td>JRNL 527 (3) Internship</td>
</tr>
<tr>
<td>Pass/Fail</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Present Calendar Entry: N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Action: Create New course</td>
</tr>
</tbody>
</table>

Rationale for Proposed Change:
In recognition of the importance of combining theory and practice, students in the Master of Journalism program must complete a 12-week professional internship before graduating. Experiential learning is a core part of a professional degree program as it enables students to practice and develop their reflective and critical thinking skills in professional contexts.

Internships enable students to develop professional skills and experiences that build on their in-class learning at UBC. Internships provide important practical skills that help students thrive after graduation, as well as an opportunity for students to explore possible career alternatives. By working as journalists alongside other professionals, students will understand themselves as practitioners and gain an appreciation of the professional community of practice they aspire to enter.

Currently, students must complete the mandatory 12-week internship, however, they do not receive credit, nor does the internship component appear on their transcript. We propose to change this to allow students to earn academic credit in recognition of the contribution to the knowledge, skills and experience gained through an internship.

In recognition of the importance of internships in the enhanced educational experience our program offers, we propose to create a new course titled “Internship” (JNRL 527).

X Pass/Fail
## UBC Curriculum Proposal Form

**Change to Course or Program**

<table>
<thead>
<tr>
<th>Category:</th>
<th>(1)</th>
</tr>
</thead>
</table>

**Faculty:** Education  
**Department:** Language and Literacy Education (LLED)  
**Faculty Approval Date:** March 18, 2013  
**Effective Session (W or S):** S  
**Effective Academic Year:** 2015

**Date:** Sept 20, 2012  
**Contact Person:** Marlene Asselin  
**Phone:** 604 822 5733  
**Email:** marlene.asselin@ubc.ca

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th>Present Calendar Entry: N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLED 559 (3) Early Literacies with Digital Technologies and Media</td>
<td>Type of Action: Create new course</td>
</tr>
</tbody>
</table>

**Rationale for Proposed Change:**

The study of early literacy development and instruction has long been grounded in assumptions about the primacy of print contexts. However, rapid changes in literacy brought on by the proliferation of digital technologies has not only affected adult and youth literacy but, perhaps most profoundly, young children's literacy. Digital literacy is inherent in many aspects of young children’s lives and teaching and learning isn't simply a matter of accommodating digital literacy practices to existing ones. Early literacy development and instruction in digital contexts encompass unique technological, cognitive, social, cultural and ethical dimensions. This course addresses this altered landscape of early literacy by examining current theories and research in these emergent areas, strengthening a critical perspective on the influences of new technologies, developing a conceptual framework for effective instruction and becoming informed of policies and contexts which differentially shape children's opportunities for an empowered literacy.

Drawing on a range of published literature of theories of early literacy and digital literacy, empirical studies of young children's early literacy in digital contexts, and local and international educational
policy of early literacy, the course will:
• explore the digitextual practices of children's everyday lives;
• investigate children's differential opportunities for engaging in digital literacy (e.g., SES; school and home) and the gap that exists in the use of technology by poor children, children in the developing world etc;
• understand digital literacy as social capital
• consider the changing nature of childhood brought on by technological affordances of social participation;
• critically analyze and evaluate the burgeoning multimedia products and edutainment software targeted to young children;
• critique the proliferating issues of safety, morality, and ethics in consumerist-based digital worlds;
• examine and critique changing literacy genres and practices brought on by mobile technologies in developing countries/economies;
• critically evaluate comparative policies and frameworks of early literacy education in N. America and globally about underlying assumptions and the place of digital literacy;
• and identify effective implications for schools, libraries, and family literacy programs.

This course has been taught twice before as a LLED 565 in 2010-11 and again in 2011-12.
UBC Curriculum Proposal Form  
Change to Course or Program

| Category: (1) | Date: February 5, 2015 |
| Faculty: Education | Contact Person: Samson Nashon |
| Department: Curriculum and Pedagogy | Phone: |
| Faculty Approval Date: Oct. 28, 2014 | Email: Samson.Nashon@ubc.ca |
| Effective Session: W Term 2 | |
| Effective Academic Year: 2014 | |

**Proposed Calendar Entry:**

**Media and Technology Studies Education**

...  
**Program Overview**
The graduate programs (M.Ed. and M.A) in *Media and Technology Studies Education* are part of the graduate offerings in the Department or Curriculum and Pedagogy. *Media and Technology Studies* provides a forum for exploring and studying information and communication technologies (ICT), new media, and the philosophy of technology. …

The Department offers a Sub-specialization in Human-Computer Interaction (HCI) in conjunction with the Media and Graphics Interdisciplinary Centre (MAGIC), which is available to students in the *Media and Technology Studies Education* program. …

**URL:**
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,204,828,1240

**Present Calendar Entry:**

**Technology Studies Education**

...  
**Program Overview**
The graduate programs (M.Ed. and M.A) in Technology Studies Education are part of the graduate offerings in the Department or Curriculum and Pedagogy. Technology Studies provides a forum for exploring and studying information and communication technologies (ICT), new media, and the philosophy of technology. …

The Department offers a Sub-specialization in Human-Computer Interaction (HCI) in conjunction with the Media and Graphics Interdisciplinary Centre (MAGIC), which is available to students in the Technology Studies Education program. …

**Type of Action:**
Change in degree title.

**Rationale for Proposed Change:**
The current title does not reflect current practices in the degree program. The proposed title reflects current practice in the field. Changes are not substantive. This change affects graduate MA and MEd programs only.
## UBC Curriculum Proposal Form

**Change to Course or Program**

<table>
<thead>
<tr>
<th>Category: (1)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Faculty: Education</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Department:</strong> School of Kinesiology</td>
</tr>
<tr>
<td><strong>Faculty Approval Date:</strong> Sept. 25th, 2014</td>
</tr>
<tr>
<td><strong>Effective Session (W or S):</strong> W, T1</td>
</tr>
<tr>
<td><strong>Effective Academic Year:</strong> 2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date: Jan. 14, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact Person:</strong> Dr. Maria Gallo</td>
</tr>
<tr>
<td><strong>Phone:</strong> 604-822-5084</td>
</tr>
<tr>
<td><strong>Email:</strong> <a href="mailto:maria.gallo@ubc.ca">maria.gallo@ubc.ca</a></td>
</tr>
</tbody>
</table>

### Proposed Calendar Entry:

**KIN 515 (3) Gap Analysis**

Using analytics to obtain, describe and visualize data to create a sport profile. Determine optimal programming decisions for coached athletes based on their performance pathway and gold medal profile. Apply research methods and principles of scientific inquiry, performance analysis, descriptive, prescriptive and predictive analytics to improve athlete development and performance.

### Present Calendar Entry: N/A

### Type of Action: Create new course

### Rationale for Proposed Change:

This new course provides the education necessary to meet the learning outcomes as stated in the new graduate certificate proposal. By the end of the course, the student will be exposed to strategies and techniques used in performance planning where the focus on the physiological factors associated with athlete performance, the linkages among them and their relationship with performance factors and Gap analysis using objective methods and analytics will be investigated. Students will design a comprehensive training plan that is Long Term Athlete Development-referenced and optimizes periodization within the competition and logistical constraints of their coaching environment, and to reflect on the limits and benefits of their program and its capacity to positively impact athletic performance. In addition, performance, training and competition readiness will be studied. The student will focus on the factors that optimize an athlete’s training and maximize their performance during competition, and ancillary factors that affect an athlete’s performance. Students will identify, design and implement a series of strategies that will produce a positive impact on an athlete’s training and performance.
# UBC Curriculum Proposal Form

**Change to Course or Program**

**Category:** (1)  
**Faculty:** Forestry  
**Department:** Forestry Graduate Programs  
**Faculty Approval Date:** Nov. 6, 2014  
**Effective Session (W or S):** Winter  
**Effective Academic Year:** 2015  
**Date:** November 6, 2014  
**Contact Person:** Cindy Prescott  
**Phone:** 2-4701  
**Email:** cindy.prescott@ubc.ca

## Proposed Calendar Entry:

Forestry  
...  
Master of International Forestry  
...  
Program Requirements

The M.I.F. is a one-year course-based degree program consisting of 31 credits: 28 required credits and a 3-credit internship or project.

The 28 course credits must include the following courses, or alternates as approved by the Program Director:

- **FRST 519 (3)**
- **FRST 522 (4)**
- **FRST 534 (4)**
- **FRST 543 (4)**
- **FRST 553 (4)**
- **FRST 559 (4)**
- **FRST 560 (4)**
- **FRST 562 (1)**

...  

## Present Calendar Entry:

Forestry  
...  
Master of International Forestry  
...  
Program Requirements

The M.I.F. is a one-year course-based degree program consisting of 31 credits: 28 required credits and a 3-credit internship or project.

The 28 course credits must include the following courses, or alternates as approved by the Program Director:

- **FRST 522 (4)**
- **FRST 534 (4)**
- **FRST 542 (4)**
- **FRST 543 (4)**
- **FRST 553 (4)**
- **FRST 559 (4)**
- **FRST 560 (4)**

...  

## URL:


## Type of Action:

Update program requirements to reflect:  
- The removal of one previously required course (FRST 542);  
- Adding two additional required courses (FRST 519, FRST 562).
Rationale for Proposed Change:
See following section for rationale.

Program Requirement Changes
Master of International Forestry (MIF)

Since the MIF degree was approved by UBC Senate in November 2011 and revised in 2013, Dean Innes has taken on the role of Program Director and a permanent Program Coordinator has also been hired. Applications are now being accepted for the first cohort to begin in September 2015.

The overall aim of the program remains the same. However, the change in oversight of the program has resulted in three adjustments being made to graduation requirements:

- deletion of FRST 542 “Forest Policy and Law”;
- inclusion of FRST 519 “Forests and Society”;
- inclusion of FRST 562 “Topics in International Forestry”.

Inclusion of policy and law matters in FRST 553 (as requested by the instructor) rendered much of the content of FRST 542 redundant. This streamlining the course requirements to remove redundancies enables us to include a unique course on livelihoods (FRST 519) which can be offered by the new Program Coordinator. This course should be much appreciated by potential students as it addresses livelihood issues in forested environments from an international perspective.

Note that both FRST 519 and FRST 562 already exist in the course calendar.
<table>
<thead>
<tr>
<th>Effective Date for Change:</th>
<th>15S</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 208 (3) Coordinations Chemistry</td>
<td>의</td>
</tr>
<tr>
<td>Prerequisite: One of CHEM 113, CHEM 123, SCIE 001</td>
<td>의</td>
</tr>
<tr>
<td>Present Calendar Entry:</td>
<td>N/A</td>
</tr>
<tr>
<td>Action:</td>
<td>Create new course</td>
</tr>
<tr>
<td>Rationale:</td>
<td>Currently, Chemistry students are introduced to inorganic chemistry in CHEM 202; a lecture course with an associated lab. Due to a recent curriculum review, CHEM 202 will be discontinued (with the last instance taught in the 2014W session) and the core of inorganic chemistry will be taught in two new second year courses. The first, CHEM 208, prepares students with core bonding concepts and orbital descriptions. The second, CHEM 218, builds upon the first by relating foundational concepts to reactivity in inorganic chemistry. The lecture content of CHEM 208 will contain a good fraction of the content in CHEM 202, as well as additional material. The lab component of CHEM 202 will be incorporated into a proposed revision of CHEM 245 which will now focus on synthetic chemistry as a whole (including organic and inorganic chemistry examples). Because the lab and lecture components of CHEM 202 are being changed, a new course number was selected to avoid confusion for adjudication and credit transfer agreements. The course will incorporate a tutorial to provide problem-solving support for students, thereby strengthening student success. Note that before being delisted, CHEM 202 will be retained in the calendar for several years during the transition to the new curriculum.</td>
</tr>
<tr>
<td>Supporting Documents: SCI-14-1-CHEM 208</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effective Date for Change:</th>
<th>15S</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 211 (4): Introduction to Chemical Analysis</td>
<td>의</td>
</tr>
<tr>
<td>Quantitative chemical analysis; chemical and physical principles of spectrophotometry,</td>
<td>의</td>
</tr>
<tr>
<td>Present Calendar Entry:</td>
<td>CHEM 211 (4) Analytical Chemistry</td>
</tr>
<tr>
<td>Present Calendar Entry:</td>
<td>Chemical equilibrium applied to analysis; volumetric analysis; analytical</td>
</tr>
</tbody>
</table>
**potentiometry, and chromatography. [3-3-0]**

Prerequisite: **One** of CHEM 113, CHEM 123, SCIE 001.

**electrochemistry. [3-3-0]**

Prerequisite: Either (a) all of CHEM 111, CHEM 113 or (b) all of CHEM 121, CHEM 123 or (c) SCIE 001.

**Action:** Modify course title and update course description. Rearrange and simplify prerequisites statement.

**Rationale:** CHEM 211 is being updated to emphasize more contemporary methods of analysis rather than classical, but less frequently used, methods of volumetric analysis. The change in description and title better reflects this revised content. Students taking CHEM 113 or CHEM 123 would have already taken either CHEM 111 or CHEM 121 as prerequisites to these courses, so the prerequisite description for CHEM 211 has been shortened to make it easier to read and apply. These earlier courses do not need to be mentioned.

**Supporting Documents:** SCI-14-1-CHEM 211

| Effective Date for Change: | 15S |
| Proposed Calendar Entry: | CHEM 218 (3) Fundamentals of Reactivity in Inorganic Chemistry |
| Chemical reactivity of inorganic systems: oxidation/reduction chemistry; multiply-bonded systems; main group chemistry. [3-0-1] | Prerequisite: CHEM 208. |

**Effective Date for Change:** 15S

**Present Calendar Entry:** N/A

**Action:** Create new course

**Rationale:** As a consequence of restructuring the overall chemistry curriculum, the core of inorganic chemistry will be taught in two second year courses. The first, CHEM 208, prepares students with the necessary bonding concepts and orbital descriptions to understand reactions in inorganic chemistry. The second, CHEM 218, builds upon the first by relating the foundational concepts to reactivity in inorganic chemistry. The course will incorporate a tutorial to provide problem-solving support for students, thereby strengthening student success.

**Supporting Documents:** SCI-14-1-CHEM 218

| Effective Date for Change: | 15S |
| Proposed Calendar Entry: | CHEM 245 (1) Intermediate Synthetic Chemistry Laboratory |
| Present Calendar Entry: | CHEM 245 (1) Intermediate Organic Chemistry Laboratory |
Techniques in **synthetic** organic and **inorganic** chemistry. Open only to students in Chemistry or Biochemistry specializations. [0-3-\(1\)]

Prerequisite: Either (a) CHEM 203 or (b) all of CHEM 233, CHEM 235.

Corequisite: CHEM 213.

---

Techniques in organic chemistry. Open only to students in Chemistry or Biochemistry specializations. [0-3-\(1\)]

Prerequisite: Either (a) CHEM 203 or (b) all of CHEM 233, CHEM 235.

Corequisite: CHEM 213.

**Action:** Modify course title, vector and description.

**Rationale:** Students currently receive laboratory exposure to inorganic chemistry through biweekly labs in CHEM 202. Recent curriculum changes in Chemistry will see new second year inorganic chemistry courses offered without associated laboratories. In the new curriculum, the content of CHEM 245 will be broadened to include organic and inorganic chemistry. The course title and description have been modified to reflect this change. Combining subdisciplines in this way better prepares students for integrated third year experiments, and reflects modern chemical practice. As detailed in the supporting information, a tutorial has been added to support students with techniques required in the laboratory, especially interpreting spectroscopic data.

**Supporting Documents:** SCI-14-1-CHEM 245
<table>
<thead>
<tr>
<th>Effective Date for Change: 15S</th>
<th>Present Calendar Entry: N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed Calendar Entry:</td>
<td></td>
</tr>
<tr>
<td><strong>CHEM 300 (3) Communicating Chemistry</strong></td>
<td><strong>Action:</strong> Create new course</td>
</tr>
<tr>
<td><strong>Effective argumentation and communication skills in chemistry. Only open to students in a Chemistry specialization. [1-0-3]</strong></td>
<td><strong>Rationale:</strong> In polls, Chemistry alumni consistently rank communication skills as very important for their occupation, whatever it may be, but rank low the training they received in communication as undergraduates. The Department of Chemistry aims to improve this situation by creating a course to prepare students to be excellent communicators. This course focuses on communication of chemical knowledge, in both written and oral forms, and the effective construction of chemical arguments. Learning communication skills in the context of chemistry will support the knowledge and know-how students gain in third- and fourth-year chemistry courses. CHEM 300 will be required for all students in a Chemistry specialization, and will also be an eligible course for satisfying the B.Sc. Communication Requirement in the Faculty of Science. <strong>Supporting Documents:</strong> SCI-14-1-CHEM 300</td>
</tr>
<tr>
<td><strong>Prerequisite: 3rd year standing</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effective Date for Change: 15S</th>
<th>Present Calendar Entry: N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed Calendar Entry:</td>
<td></td>
</tr>
<tr>
<td><strong>CHEM 318 (3) Principles of Catalysis</strong></td>
<td><strong>Action:</strong> Create new course</td>
</tr>
<tr>
<td><strong>Fundamental aspects of chemical catalysis: kinetic models; catalytic processes in biochemistry and industry; emerging topics in catalysis. [3-0-0]</strong></td>
<td><strong>Rationale:</strong> As a consequence of restructuring the overall Chemistry curriculum, chemistry content in third year is being reorganized. In particular, CHEM 309 and CHEM 310 will no longer be offered after the 2015W session, replaced instead with courses that span thematic areas in modern chemistry. Catalysis is one of these areas, forming a significant core of many chemical processes. This course will examine chemical catalysis from a more general perspective, including examples chosen from inorganic, organic, biological, and industrial chemistry. The CHEM 250 prerequisite provides the opportunity for interested Applied Science students to take the course. <strong>Supporting Documents:</strong> SCI-14-1-CHEM 318</td>
</tr>
<tr>
<td><strong>Prerequisite: CHEM 218 or CHEM 250.</strong></td>
<td></td>
</tr>
<tr>
<td>Proposed Calendar Entry:</td>
<td>Present Calendar Entry: N/A</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>CHEM 319 (1) Practical Skills for Chemical Research</td>
<td></td>
</tr>
<tr>
<td>The nature of scientific research; practical skills for chemical research; communicating science. Restricted to Honours students with third year standing and, with permission of the department Head, to Major students with satisfactory third year standing. Pass/Fail. [1-0-0.5]</td>
<td></td>
</tr>
<tr>
<td><strong>Effective Date for Change:</strong> 15S</td>
<td></td>
</tr>
<tr>
<td><strong>Rationale:</strong> Surveys of Chemistry graduates show that the current curriculum does not adequately prepare students for life following graduation. In particular, respondents identified areas such as working in teams, oral communication, networking and career planning as being desirable skills and attributes not currently addressed. As a result, a suite of courses are being created to enrich the chemistry experiences for Honours students. Each course focuses on different aspects of a student’s degree experience (or life post-degree). CHEM 319 is one course in the suite and introduces students to the nature of scientific research. It also builds library and presentation skills by exposing students to advanced software and techniques commonly used by researchers in chemistry. Because this course is meant to provide an interactive and supportive environment in which students progressively improve their skills based upon feedback, the course is designed as pass/fail without the use of formal exams.</td>
<td></td>
</tr>
<tr>
<td><strong>X Pass/Fail or □ Honours/Pass/Fail grading</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Supporting Documents:</strong> SCI-14-I-CHEM 319</td>
<td></td>
</tr>
<tr>
<td>Effective Date for Change: 15S</td>
<td></td>
</tr>
<tr>
<td>Proposed Calendar Entry:</td>
<td>Present Calendar Entry: N/A</td>
</tr>
<tr>
<td>CHEM 327 (3) Introduction to Materials Chemistry</td>
<td></td>
</tr>
<tr>
<td>Basic principles of materials chemistry: classification; nomenclature; synthetic methods; characterization. [3-0-0]</td>
<td></td>
</tr>
<tr>
<td>Prerequisite: One of CHEM 208, CHEM 250 and one of CHEM 203, CHEM 233, CHEM 260.</td>
<td></td>
</tr>
<tr>
<td><strong>Action:</strong> Create new course</td>
<td></td>
</tr>
<tr>
<td><strong>Rationale:</strong> As a consequence of restructuring the overall Chemistry curriculum, the Department's course offerings were examined in relation to the practice of modern chemistry. Materials chemistry is an important and growing area of modern chemistry, and several faculty members are actively involved in this area. The Department is strengthening the materials chemistry content in the curriculum. This proposed course is the first introduction students will receive in materials chemistry. It will form a foundation upon which fourth year materials chemistry courses will build.</td>
<td></td>
</tr>
<tr>
<td>Proposed Calendar Entry:</td>
<td>Present Calendar Entry:</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>CHEM 329 (1) Research Ethics and Data Analysis Skills</td>
<td>N/A</td>
</tr>
<tr>
<td>Research ethics; data analysis skills for chemical research. Restricted to Honours students with third year standing and, with permission of the department Head, to Major students with satisfactory third year standing. Pass/Fail. [1-0-0.5]</td>
<td></td>
</tr>
</tbody>
</table>

**Action:** Create new course

**Rationale:** Surveys of Chemistry graduates show that the current curriculum does not adequately prepare students for life following graduation. In particular, respondents identified areas such as working in teams, oral communication, networking and career planning as being desirable skills and attributes not currently addressed. As a result, a suite of courses are being created to enrich the chemistry experiences for Honours students. Each course focuses on different aspects of a student’s degree experience (or life post-degree). CHEM 329 is one course in the suite and introduces students to research ethics. It also enriches data analysis skills by exposing students to advanced software and techniques commonly used by researchers in chemistry. This course, and its companion CHEM 319, provide students advance skills that can be applied during their capstone research experience in CHEM 449. Because this course is meant to provide an interactive and supportive environment in which students progressively improve their skills based upon feedback, the course is designed as pass/fail without the use of formal exams.

**Supporting Documents: SCI-14-1-CHEM 327**

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
<th>Present Calendar Entry:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 419 (1) Establishing a Career in Chemical Research</td>
<td>N/A</td>
</tr>
<tr>
<td>Current research and career perspectives in chemistry. Restricted to Honours students with fourth year standing and, with permission of the department Head, to Major students with satisfactory fourth year standing. Pass/Fail. [1-0-0.5]</td>
<td></td>
</tr>
</tbody>
</table>

**Action:** Create new course

**Rationale:** Surveys of Chemistry graduates show that the current curriculum does not adequately prepare students for life following graduation. In particular, respondents identified areas such as working in teams, oral communication, networking and career planning as being desirable skills and attributes not currently addressed. As a result, a suite of courses are being created to enrich the chemistry experiences for Honours students. Each course focuses on different aspects of a student’s degree experience (or life post-degree). CHEM 329 is one course in the suite and introduces students to research ethics. It also enriches data analysis skills by exposing students to advanced software and techniques commonly used by researchers in chemistry. This course, and its companion CHEM 319, provide students advance skills that can be applied during their capstone research experience in CHEM 449. Because this course is meant to provide an interactive and supportive environment in which students progressively improve their skills based upon feedback, the course is designed as pass/fail without the use of formal exams.

**Supporting Documents: SCI-14-1-CHEM 329**
Courses are being created to enrich the chemistry experiences for Honours students. Each course focuses on different aspects of a student’s degree experience (or life post-degree). CHEM 419 is one course in the suite and is focused on preparing students for post-degree opportunities, such as employment in industry or graduate studies. Because this course is meant to provide an interactive and supportive environment in which students progressively improve their skills based upon feedback, the course is designed as pass/fail without the use of formal exams.

| X Pass/Fail or | □ Honours/Pass/Fail grading |

Supporting Documents: SCI-14-1-CHEM 419
18 February 2015

To: Vancouver Senate
From: Senate Curriculum Committee
Re: February Certificate Programs (information)

Please find attached the following certificate programs for your information:

Graduate Certificate in Global Surgical Care

Graduate Certificate in High Performance Coaching and Technical Leadership

Respectfully submitted,

Mrs. Carol Jaeger, Vice-Chair

Senate Curriculum Committee
Graduate Certificate in Global Surgical Care

Proposed name of Certificate Program:
Graduate Certificate in Global Surgical Care (GCGSC)

Date of Submission:
08/01/2014

Sponsoring Faculty/Department/School:
Faculty of Medicine/Department of Surgery/Branch for International Surgical Care

Contact Person:
Name: Dr. Robert Taylor
Title: Director, Branch for International Surgical Care
Telephone: 604-875-5372
Email: Robert.taylor@ubc.ca, surgery.international@ubc.ca

Supporting UBC Partners or External Partners:
School of Population and Public Health (SPPH)

Program Description
The Graduate Certificate in Global Surgical Care (GCGSC) is designed to meet the growing need for professional development of students interested in focusing on the global health problem of the burden of unmet surgical care. Students will complete four 3 credit online courses. Each course is designed to bring different and complementary essential aspects that provide depth and breadth to the subject. Students will research journal articles, view videos, complete course specific tasks and assignments as well as engage in facilitated online discussion forums.

SURG 510: Students will examine the historical beginnings, the reasons for the emergence of surgical care in the public health agenda and the details of the global burden of surgical care need. They will explore the wide spectrum of volunteerism, ethics related to clinical care and research, guidelines for activity (projects, programs, partnerships) and the role of advocacy in global surgical care.

SURG 512: Students will critique current models of addressing the fact that globally, one billion people live with a disability of whom 80% live in resource-limited settings which further compounds the family and public burden and discuss frameworks for moving forward.

SURG 514: Students will examine the current status of global activity by national and international responders to both natural and conflict-related humanitarian disasters with particular emphasis on the role of surgical care.

SPPH 540: Students will become literate and functionally competent in program planning and evaluation. The course involves developing a program plan and an evaluation proposal for a public health program, particularly as it relates to global surgical care initiatives.

Rationale for the Program
Interest in academic global health programs is growing rapidly. Surgical care clinicians, residents in training and health professionals from many disciplines wish to incorporate international surgical care into their careers. They are pursuing training and experiences that will prepare them to make effective contributions in addressing the surgical care problems of low resource settings globally. Global surgical care delivery projects, international partnerships focused on surgical care education and research and global disasters requiring a surgical care response all highlight the opportunities for physicians to help, but also prompt unease at often being asked to provide surgical and other services for which they are ill-equipped and that may impose approaches to care that while well-intentioned are inappropriate. This certificate bridges that gap and meets the learning needs of this growing cadre of students.
Currently, there are no accredited graduate-level degree or certificate courses of study available to this cadre and this proposed Certificate would be unique in the world.

A Marketing Plan completed by a UBC Sauder School MBA intern in July 2012 supports the continued development of the academic program being offered through the Branch for International Surgical Care. A few highlights include:

- A definite interest by students already enrolled in or having completed one of our courses in taking more SURG courses in the future.
- Others indicated interest in pursuing a master’s or graduate certificate in global surgery.
- It was also noted that our courses are unique and that was attractive to participants in that it gave them a chance to show leadership.
- The interest rating in global surgery was already quite high at 75% of those surveyed and that number was predicted to continue to increase on an annual basis.

**Proposal length/duration**

12 credits – four required 3 credit courses

As per Appendix K in the Senate Curriculum Submission Guide, “The program of study should be equivalent to a minimum of one-half year (approximately 150 hours) and a maximum of one-full year of University study”.

Each 3 credit course is offered online over 12 weeks. Each course will require approximately 6-8 hours of online activities per week. This would equate to more than 150 hours. These numbers are based on direct feedback from students from previous offerings of our SURG courses. Students will commit to the number of hours that works best for them as learners and will likely fall somewhere within this range. Two courses will be offered in Winter Term I and two courses will be offered in Winter Term II.

**Proposed curriculum topics**

Required courses are:
SURG 510 (3) – Surgical care in International Health
SURG 512 (3) – Global Disability: A Surgical Care Mandate
SURG 514 (3) – Surgical Care in Humanitarian Disaster Response
SPPH 540 (3) – Program Planning and Evaluation

**Target learners**

1. Surgical care clinicians, trainees in surgical care disciplines, allied health professionals or trainees involved, or who wish to be involved, in global surgical care programs
2. Students who have successfully completed any of the SURG courses and want to complete the certificate
3. Graduate students from other UBC programs eligible to take any of the courses as an elective.
4. Graduate students from other recognized universities who are eligible to take any of the courses as an elective
5. Students who already have a master’s degree in a related field who are interested in incorporating international surgery into their careers
6. Students who want to pursue further studies leading to a possible master’s in global surgical care when it is available

**Student Admission Criteria**

**Graduate Certificate in Global Surgical Care (GCGSC)**

Criteria for admission to the certificate program will be the same as those required for admission to master’s programs at UBC, as outlined by the Faculty of Graduate and Postdoctoral Studies.
This program is intended for surgical care clinicians, trainees in surgical care disciplines, allied health professionals or trainees involved, or who wish to be involved, in global surgical care programs.

Each applicant will be required to submit a letter of intent and a resume that includes their education and work experience. This information will be reviewed by the Director of the Branch for International Surgical Care.

With regard to SPPH 540, the only course with prerequisites, students will be required to provide evidence of a basic understanding of epidemiological concepts and biostatistics either through previous courses completed or from work experience. The Director of the Branch for International Surgical Care and the Instructor of SPPH 540 will review applications and grant permission based on evidence provided at the time of the application.

**Student Assessment/Grading methods**

The following rubric will be used to evaluate all submitted assignments in each of the four certificate courses:

(from the UBC Department of Educational Studies, Graduate Course Grading Policy):

- **A+ is from 90% to 100%**: It is reserved for exceptional work that greatly exceeds course expectations. In addition, achievement must satisfy all the conditions below.
- **A is from 85% to 89%**: A mark of this order suggests a very high level of performance on all criteria used for evaluation. Contributions deserving an A are distinguished in virtually every aspect. They show that the individual significantly shows initiative, creativity, insight, and probing analysis where appropriate. Further, the achievement must show careful attention to course requirements as established by the instructor.
- **A- is from 80% to 84%**: It is awarded for generally high quality of performance, no problems of any significance, and fulfillment of all course requirements.
- **B Level (68% to 79%)**: This category of achievement is typified by adequate but unexceptional performance when the criteria of assessment are considered. It is distinguished from A level work by problems such as: One or more significant errors in understanding, superficial representation or analysis of key concepts, absence of any special initiatives, or lack of coherent organization or explanation of ideas. The level of B work is judged in accordance with the severity of the difficulties demonstrated. B+ is from 76% to 79%, B is from 72% to 75%, and
- **B- is from 68% to 71%**
- **C Level (55% to 67%)**: Although a C+, C, or C- grade may be given in a graduate course, the Faculty of Graduate and Postdoctoral Studies considers 68% as a minimum passing grade for doctoral graduate students.

The Faculty of Graduate and Postdoctoral Studies considers 60% as a minimum passing grade for graduate students. Students should check the Academic Calendar for information on what constitutes “Satisfactory Progress” for masters and doctoral students.

In general, a grade of 68% must be maintained to remain in good standing. See the Policies and Regulations section of Calendar for more information.

Satisfactory progress, as defined by the Faculty of Graduate and Postdoctoral Studies for master's students, must be maintained.

In each of the four certificate courses there will be continuous examination of student performance. Learners will be awarded grades for:

a. their interactive participation via online discussion boards within each course based on literature research that exhibits critical thinking and understanding of the course-specific material
b. two or three major written assignments per course. The written assignments consist of essays, case studies, project plans and proposals.
Withdrawals from a specific course and/or from the certificate program will be processed as per the policies and guidelines of Graduate and Postdoctoral Studies.

Program Delivery format
The GCGSC program builds upon existing courses. All of the courses are Distance Education (Centre for Teaching, Learning and Technology) offered online through the Connect and WordPress Course Management Systems.

Marketing/promotion strategy
The GCGSC will be advertised on the Department and Branch Web sites. Flyers/posters will be distributed to relevant organizations such as Universities, Hospitals, National Society sites and International NGO sites. Updates will be shared internally at accredited teaching rounds and other meetings. Alumni will be contacted and provided with updates and encouraged to promote within their professional affiliations.

Assessment of Impact on Departmental & University Resources
GCGSC students will enrol in existing SURG courses and thus no new curriculum is required. Enrollment will be capped at 15 per course ensuring a manageable workload for faculty. Faculty involvement will include monitoring and participating in on-line discussion forums and grading assignments. Given the reality of our respective faculty’s workload, we will assign two faculty members for each course. This will allow for effective team-teaching and facilitating if and when someone is required to travel or some other situation arises where they will have limited time or accessibility. Applications will be directed to the manager of the Branch for International Surgical Care and reviewed by the Director of the Branch.

Assessment of financial viability
Given that this certificate builds on existing resources the program is deemed to be financially sustainable and operate on a cost-recovery basis. If any revenue is incurred, then it will be used to support updating the curriculum.

See attached Appendices A, B and C for the 10-year financial plan created with the Strategy and Decision Support Group.

Fees
There will be a course-based tuition fee:
Domestic $416.67 per credit (3) + $47.25 Distance Education Administration fee = $1297.25
International $851.25 per credit (3) + $47.25 Distance Education Administration fee = $2601.00

Current Program Advisory Committee members
Dr. Robert H. Taylor, C.M., MD, MIH, DipTM, FRCSC
Clinical Professor, Dept. of Surgery (General Surgery), UBC

Dr. Brian Westerberg, MD, MHSc, FRCSC
Clinical Professor, Dept. of Surgery (Otology & Neurotology), UBC

Dr. David Fairholm, MD, Dip Med Ed, FRCSC
Clinical Professor, Dept. of Surgery, (Neurosurgery), UBC
## UBC Curriculum Proposal Form

**Change to Course or Program**

<table>
<thead>
<tr>
<th>Category: (I)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Faculty: Medicine</th>
<th>Date: August 1, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: Surgery</td>
<td>Contact Person: Dr. Robert H. Taylor</td>
</tr>
<tr>
<td>Faculty Approval Date: August 18, 2014</td>
<td>Phone: 604-875-5372</td>
</tr>
<tr>
<td>Effective Session (W or S): S</td>
<td>Email: <a href="mailto:robert.taylor@ubc.ca">robert.taylor@ubc.ca</a></td>
</tr>
<tr>
<td>Effective Academic Year: 2015</td>
<td><a href="mailto:surgery.international@ubc.ca">surgery.international@ubc.ca</a></td>
</tr>
</tbody>
</table>

**Proposed Calendar Entry:**

The Faculty of Medicine

Contents

…

Genetics Graduate Program ➔

Graduate Certificate in Global Surgical Care ➔ **<<link to page created by the following proposal>>**

Graduate Certificate in Rehabilitation ➔

…

**Present Calendar Entry:**

The Faculty of Medicine

Contents

…

Genetics Graduate Program ➔

Graduate Certificate in Rehabilitation ➔

…

**Type of Action:**

Add Graduate Certificate in Global Surgical Care to the Faculty of Medicine section of the Calendar

**Rationale for Proposed Change:**

The Graduate Certificate in Global Surgical Care is a new program and thus must be added to the Calendar. The certificate will be administered by the Faculty of Medicine so it is appropriate to list it in the Faculty’s section (like the Graduate Certificate in Rehabilitation).

<table>
<thead>
<tr>
<th>Proposed Calendar Entry:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Graduate Certificate in Global Surgical Care</th>
</tr>
</thead>
</table>

This is an online program that aims to prepare surgical care professionals from many disciplines to address surgical challenges and contribute to finding solutions in low resource settings globally.

**Admission**

Criteria for admission to the certificate

**URL:** [http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,209,0,0](http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,209,0,0)

**N/A**

**Type of Action:** Create new graduate certificate program

**Rationale for Proposed Change:**

Interest in academic global health programs is growing rapidly. Surgical care clinicians, residents in training and health professionals from many disciplines wish to incorporate international surgical care into their careers. They are pursuing training and experiences that will prepare them to make effective
program will be the same as those required for admission to Master’s programs at UBC, as outlined by the Faculty of Graduate and Postdoctoral Studies. For more information, refer to the Faculty of Graduate and Postdoctoral Studies’ entry in the Academic Calendar regarding Master’s Admissions.

For complete application information please see the certificate program’s website <http://internationalsurgery.med.ubc.ca/education-courses/application-tuition/>

This program is intended for surgical care clinicians, trainees in surgical care disciplines, allied health professionals or trainees involved, or who wish to be involved, in global surgical care programs

Certificate Requirements
All students must complete the following four courses (12 credits): SURG 510 (3); SURG 512 (3); SURG 514 (3); SPPH 540 (3). Satisfactory progress as defined by the Faculty of Graduate and Postdoctoral Studies for Master’s students must be maintained. Students must complete their requirements within 4 years of starting the program. For more information, refer to the Faculty of Graduate and Postdoctoral Studies’ entry in the Academic Calendar regarding Academic Progress.

Contributions in addressing the surgical care problems of low resource settings globally. Global surgical care delivery projects, international partnerships focused on surgical care education and research and global disasters requiring a surgical care response all highlight the opportunities for physicians to help. Unfortunately, these opportunities also prompt unease at often being asked to provide surgical and other services for which they are ill-equipped and that may impose approaches to care that, while well-intentioned, are inappropriate. This certificate bridges that gap and meets the learning needs of this growing cadre of students. Currently, there are no accredited graduate-level degree or certificate courses of study available to this cadre and this proposed Certificate would be unique in the world.

In 2009, the Branch for International Surgical Care launched the first-ever online graduate course focusing on International Surgery, SURG 510, Surgical Care in International Health. This has been followed in subsequent years by two more online graduate courses. SURG 512, Global Disability: A Surgical Care Mandate, in 2012 and SURG 514, Surgical Care in Humanitarian Disaster Response, in 2014. Graduates of SURG courses as well as surgery-related residents across Canada and abroad have expressed a strong desire for additional courses that will lead to a postgraduate program in international surgery.

The fourth course for the Certificate is SPPH 540, Program Planning and Design.

These courses are delivered entirely online and are extremely innovative and contribute to UBC’s strategic goal of strengthening its presence as a globally influential university and its reputation as an international leader in health education, research and community service.
Proposal for Graduate Certificate in High Performance Coaching and Technical Leadership  
January 15th, 2015

Proposed name of certificate program and proposed credential to be awarded, including the level and category of the degree and the specific discipline or field of study
Graduate Certificate in High Performance Coaching and Technical Leadership  
Field: Kinesiology

Program Rationale
The rationale for developing the UBC Graduate Certificate in High Performance Coaching and Technical Leadership is to provide outstanding education and professional development to students who will become high performance coaches and technical sport leaders in the Canadian Sport System.

Background Information
The field of coaching science has seen significant growth in Canada and around the world in national contexts that support high performance sports programs. National-level investment in sports performance has helped to fund a growing research sector around coaching as well as human performance. In Canada, a number of national organizations and agencies are contributing to the evolution of coaching science, including the Coaching Association of Canada, Own the Podium, Canadian Sport Institutes, and Sport Canada. Linking national coaching qualifications to higher education is a critical next step in the evolution of coaching as a profession. In addition, the increased sophistication of high performance sport has created leadership positions at the national and provincial levels where technical leaders are responsible for developing and overseeing athlete development programs. Importantly, no post-secondary institutions in Canada currently offer formal academic training for either of these roles: High Performance Coach or Technical Leader.

Market research conducted in preparation for this graduate certificate found a high level of interest in university-based qualifications among those currently working in high performance leadership roles as head coaches, technical directors and performance directors at the national and provincial levels. There was particular interest by those currently in the workforce to have a one-year certificate available to obtain credentials and as a potential stepping-stone towards a Master’s degree. National sports organizations, including the Coaching Association of Canada (CAC) and the Canadian Sport Institute (CSI), have expressed strong support for the proposed program, and have agreed to accept this qualification to facilitate professional coach recognition within national and provincial sport support systems (see Appendix for letters of support).

The demands on high performance coaches and technical leaders to innovate, to base decisions on current sport science and organizational leadership research, and
to design systems that are globally competitive, has created the need to offer more sophisticated and comprehensive preparation.

**Location**
UBC Campus and distance education (online)

**Faculties/Schools offering the proposed new degree program**
Faculty of Education/School of Kinesiology

**Anticipated start date**
September 2015

**Target Learners**
Coaches working with athletes on the “Podium Pathway”, that is, Provincial/Canada Games, Sport Institutes, elite club, and CIS (Canadian Interuniversity Sport) coaches. These coaches are working in full-time or part-time coaching positions and are likely to focus on self-directed Professional Development that include:
- A highly flexible approach to delivery in order to fit with occupational demands.
- Opportunities to transition to a future technical leadership role (similar to the national coaches).
- Ability to expand on current practice by access to world leading research and innovation in high performance sport.

Other candidates for the program will include technical sport leaders such as:
- high performance directors, current technical leaders, managers, executive directors and coordinators (national and provincial levels) and/or high performance coaches not necessarily working with current high performance athletes, but in other domains. These individuals might be interested in:
  - individual courses or professional development experiences (rather than a qualification)
  - an opportunity to move into high performance coaching after being a successful athlete

**Student Admission Criteria**

**Bachelor’s Degree**
Candidates will normally have a Bachelor’s degree in Human Kinetics, Physical Education, Kinesiology or other related field of study with one of the following:
- A minimum overall average in the B+ range (76% at UBC) in third- and fourth-year level courses.
- Academic standing with at least 12 credits of third- or fourth-year level courses in the A grade range (80% or higher at UBC) in their field of study.
- Alternatively, applicants who do not meet the requirements stated above, but who have had significant formal training and relevant professional experience, and/or otherwise possess demonstrable knowledge or expertise
that would prepare them adequately for successful study in the graduate certificate program, may be granted admission on the recommendation of the admissions committee and approval of the Dean of the Faculty of Graduate and Postdoctoral Studies.

Prior Experience
In addition, candidates will normally have:

- 5 years of coaching experience, including coaching athletes at the national team or Canada Games level, or 5 years as a carded National Team athlete,
- National Coaching Certification Program qualification at level 3 or “Competition Development”,
- recommendation of the National Sport Organization, and
- submission of a portfolio showing an annual training plan the candidate has developed and implemented, other evidence of their practical coaching, and any articles or coaching materials they have produced.

Special admission into graduate studies will be considered for candidates who have demonstrated extraordinary leadership potential and impact in their coaching careers, but may lack formal academic (undergraduate) training or credential. These candidates will need to demonstrate the drive to excel and the intellectual capability required to succeed, where ability to progress in the program will be assessed within the graduate certificate.

Admissions Committee
An Admissions Committee, including representatives of the national sport community, will screen candidates, and liaise with the National Sport Organizations. Procedures will follow those specified by the University and by the Faculty of Graduate and Postdoctoral Studies.

Proposed Curriculum topics
A multi-sport model will be used for the core knowledge of the program in keeping with current practices in the National Coaching Certification Program (NCCP), and other graduate programs in coaching.
Specific sport knowledge development is addressed through course assignments and the practicum placement.

1. KIN 515 - Gap Analysis
Using analytics to obtain, describe and visualize data to create sport profile. Determine optimal programming decisions for coached athletes based on performance pathway and gold medal profile. Apply research methods and principles of scientific inquiry, performance analysis, descriptive, prescriptive and predictive analytics to improve athlete development and performance.
2. KIN 585 - Performance Planning
Application of findings from sport profile and gap analysis to the planning and design of high performance training and coaching programs. Focuses on quadrennial, annual, meso and microcycle planning to integrate key factors that impact athlete performance and progression along the athlete development pathway.

3. KIN 586 - Coaching Effectiveness
Analysis of athlete performance and appropriate design and application of coaching intervention and skill acquisition for athlete and coach development.

4. KIN 598 - Directed Field Studies: Practicum
Application of concepts/topics; mentorship; project to reflect changes in coaching practice. Support to be provided by the candidate's National Sport Organization, and/or regional Canadian Sport Institute. Technical leader practicum is to be in the candidate's workplace or as a volunteer doing a specific project for an organization.

Proposed Length/Duration (indicate hours, credits, months)
To accommodate mid-career professionals who are currently working as coaches and technical leaders, the UBC Graduate Certificate in High Performance Coaching and Technical Leadership will be offered on a part-time basis over 12 months.

To complete the graduate certificate, candidates will complete four three-credit courses. KIN 515, KIN 585 and KIN 586 (39-hours each) will be offered over three terms using a combination of short residential periods, synchronous and asynchronous on-line work. KIN 598, a Directed Field Study, will require a placement in a practical coaching or technical leadership position for a minimum of 40 hours. National Sport Organization and Canadian Sport Institute will provide mentoring opportunities to align this practicum with the sport specific technical requirements under the supervision. A School of Kinesiology faculty member will be involved in the practicum and will provide feedback to the student, and assessment.

Graduate certificate courses
1. KIN 515 - Seminar - Special Topics in Kinesiology: Gap Analysis (39 hrs)
2. KIN 585 - Performance Planning (39 hrs)
3. KIN 586 - Coaching Effectiveness—improving coaching practice (39 hrs)
4. KIN 598 - Directed Field Studies: Practicum (placement minimum 40 hrs)

The certificate will commence with a one-week orientation in September at UBC, the courses will run over the winter terms, to conclude with a face-to-face session at the end of the certificate.

A description of the program:
The UBC Graduate Certificate in High Performance Coaching and Technical Leadership is a one-year, 12 credit specialized program for experienced sport coaches and technical managers who are looking to advance in their careers and engage in professional development. Through a partnership with the leading
national agencies in high performance sport, a quality program will be offered using a blended delivery model.

The program will provide a strong foundation for present and future coaches and technical leaders by developing knowledge and skills in the interpretation and use of research, balanced with applied coaching practice. National sport leaders have identified developing skills in analysis and evidence-based decision-making as a critical need, and this program will help develop the next generation of sport leaders for Canada.

A blended model of residential periods and on-line teaching methods will facilitate the participation of candidates from across Canada and around the world. The program will be integrated into the sport federations’ national coaching qualifications, providing national certification together with academic credentials. Development of this program is based on the need for Canada to produce technical leaders and coaches who can prepare high performance athletes and teams to win in international competition. There is no other program with this focus in the country. It is being developed to: i) improve the quality of high performance coaching in Canada; ii) contribute to coaching as a profession; and iii) provide better recognition – and a qualification that is transferrable and universal – to the coaches who commit to this level of study.

a) **Aims/goals and objectives**
   1. To develop coaches with the competence to produce medal performances in international competition at the developmental level.
   2. To develop technical leaders with the competence to provide strategic and operational leadership of a sport program.

b) **Anticipated contribution to the mandate and strategic plan of the institution**
   This program will contribute to our goal of student learning: offering education opportunities in the growing field of coaching sciences. We will engage the community by promoting sporting excellence while doing it in an intercultural, international and outstanding environment.

c) **Program learning outcomes**
   The curriculum is designed around three key outcomes:
   - Coaching Effectiveness
   - Performance Planning
   - Training and Competition Readiness

Coaching Effectiveness: The coach analyzes athlete performance and adapts their intervention to foster technical and tactical development in the athlete. By the end of the program, coaches will be able to analyze changes in athlete performance and at the same time examine their coaching practices, interventions and decisions that may have impacted those changes.
Performance Planning: Focuses on the physiological factors associated with athlete performance, the linkages among them and their relationship with performance factors and gap analysis using objective methods and analytics. By the end of the program, coaches will have designed a comprehensive training plan that is Long Term Athlete Development (LTAD)-referenced while optimizes periodization within the competition and logistical constraints of their coaching environment. Additionally, they will reflect on the limits and benefits of their program and its capacity to positively impact athlete performance.

Training and Competitive Readiness: Focuses on the factors that optimize an athlete’s training and maximize their performance during competition, and ancillary factors that affect an athlete’s performance. By the end of the program, coaches will be able to identify, design and implement a series of strategies that will produce a positive impact on an athlete’s training and performance.

d) Program-level outcomes:

Performance Planning, students will be able to:

1. Describe performance demands of sport/event coached using scientific research and analytics derived from performance analysis.
2. Describe the Gold Medal profile of coached athlete relative to stage in podium pathway using descriptive, prescriptive and predictive analytics.
3. Identify and test for gaps in technical, tactical, mental and physical performance factors relative to their Long Term Athlete Development stage.
4. Examine and research approaches and strategies used to periodize athlete training.
5. Identify strengths, weaknesses, opportunities and threats to the performance plan.
6. Identify logistical decisions that had positive or negative effects on the athlete/team performance and required to implement the Yearly or Multi-year Training Program.
7. Outline program structure based on training, competition, and recovery needs and opportunities.
8. Design a plan for athlete health care and safety and create a safe environment for training.
9. Design and plan training stimuli that are appropriately sequenced for optimal adaptation.
10. Design micro/mesocycles to organize and sequence training, competition and recovery activities.
11. Develop and implement strategies to monitor the training program.

Coaching Effectiveness, students will be able to:

1. Examine pre-determinants of expertise and optimal practice conditions and intervention strategies to maximize athlete potential.
3. Tests and implements innovative practices to improve athletes’ learning of technical and tactical elements that enhance performance.
4. Uses effective strategies and identify corrections to assist athletes or coaches to improve or refine technical elements that will enhance performance.
5. Plan, design and deliver practices that enhance desired training stimulus.
6. Integrates the use of technology to effectively analyze athlete and coach performance, and to augment feedback during practice/training conditions.
7. Identify gaps and strengths in coaching abilities based on feedback/observations that will assist in increasing one’s effectiveness as a coach.
8. Develop and implement a systematic analysis of current athlete(s) in order to maximize development and podium potential within sport.
9. Critically reflect on coaching practice and provide portfolio of evidence that support current coaching practices.

Training and Competition Readiness, students will be able to:

1. Identify monitoring strategies that measure athlete / team progress to track changes in performance.
2. Develop a tapering and peaking program in preparation for important competitions appropriate to Long Term Athlete Development stage.
3. Develop and implement for coach’s program and context, sport specific strategies for athlete identification, talent development, transfer and selection that are consistent with scientific principles and National/Provincial Sport Organization guidelines.
4. Collaborate with others in planning the logistics, obtaining and allocating financial resources, and accessing and effectively using support persons for selected competition or training event.
5. Build an effective team of athletes and/or staff and support teams.
6. Optimize appropriate and ethical use of electronic and social media to support communication within program.
7. Produce evidence-based, appropriately detailed, and timely written reports to monitor athlete/team performance, progress, and behavior.

e) Delivery methods
The program will start with a one-week orientation, introducing the three formal courses (KIN 515, 585 & 586) and establishing work plans for the Directed Field Study (KIN 598). The courses will be delivered online with added synchronous classes scheduled throughout the fall and winter terms. The certificate will conclude with a face-to-face session in May or August.

f) Student Assessment/Grading Methods
Students must complete their required courses within two years of admission. All courses are percentage graded as follows:

High A (90-100% A+, 85-89% A):
1) Required learning activities are completed.
2) All efforts display outstanding commitment to learning, including evidence of
considerable independent research outside the class time.
3) Evidence of outstanding ability to analyze and synthesize relevant ideas, along with confirmation of the ability to critically assess & weigh alternative perspectives in an informed fashion.
4) Prepared materials represent original (to the learner) insight, thought or presentation and are organized logically and clearly expressed.
5) Cooperative engagement with peers and demonstrated leadership in learning
6) No deficiencies of note.

A-B (80-84% A-, 76-79% B+):
1) Required learning activities are completed.
2) Efforts display a sound grasp of concepts.
3) Evidence of synthesis of relevant ideas, along with the ability to critically assess & weight alternative perspectives in an informed fashion.
4) Prepared materials are organized logically and clearly expressed.
5) Cooperative engagement with peers.
6) Minor difficulties that are developmental in nature.

B-C (72-75% B, 68-71% B-, 64-67%C+, 60-63% C)
1) Required learning activities are completed.
2) Efforts display a basic grasp of concepts.
3) Evidence of a basic ability to synthesize of relevant ideas, along with the ability to critically assess & weigh alternative perspectives in an informed fashion.
4) Prepared materials are organized logically and clearly expressed.
5) Cooperative engagement with peers.

The Faculty of Graduate Studies considers 60% as a minimum passing grade for graduate students. Students should consult the University Calendar for information on what constitutes “Satisfactory Progress”. In general, a grade of 68% must be maintained to remain in good standing. Policies and Regulations section of Calendar for more information should be consulted. Satisfactory Progress as defined by the UBC must be maintained.

**g) Program strengths**
The program will:
- Incorporate NCCP qualifications. Letters from the Coaching Association of Canada / Canadian Sport Institute Pacific and from Canada Basketball confirming that the UBC graduate certificate will qualify coaches for NCCP credit are attached to the Appendix.
- Access leading experts in High Performance Sport and sport practitioners working with Canada’s Olympic athletes and coaches.
- Be available across Canada, and internationally using a blended on-line and residential model.
- Include a three-credit practicum, which can be integrated into a sport’s High Performance National Coaching Certification Program requirements.
- Include teaching faculty that are content experts (from the Canadian Sport Institute network).
- Have flexible admission requirements to allow exceptional coaches to be accepted into the program.

\[ h) \text{ Level of support and recognition from other post sec schools, plans for admissions and transfers} \]

Sport organizations including Own The Podium (OTP), Coaching Association of Canada (CAC), Canadian Sport Institute (CSI) and National Sport Organizations are supporting this program (See Appendix A for letters of support). The only other program like this one is at Laval University, which is primarily conducted in French. The Laval program and UBC's program will share a common philosophy and model and will be recognized as equivalent by CAC. Admission and transfers will be based on merit and follow G+PS/UBC policies.

\[ i) \text{ Related programs in BC, indicate rationale for duplication if applicable} \]

There are no related programs in BC.

\[ j) \text{ Marketing/Promotion Strategy} \]

The program will be advertised on the school’s website. Canadian Sport Institute Pacific and the Coaching Association of Canada will promote the UBC graduate certificate among current and emerging high performance coaches, with the endorsement of OTP. Electronic flyers will be developed and distributed to NSOs. Provincial and territorial coaching conferences will be targeted as well. Members of these programs will be receiving information on this new potential program.

\[ k) \text{ Assessment of Impact on Departmental and University Resources} \]

Refer to delivery format and also the library consultation form (attached)

\[ l) \text{ Assessment of Financial Viability} \]

Given that this certificate builds on existing resources, the program is deemed financially sustainable. (Please refer to Hugh Brock's response and financial approval).

\[ m) \text{ Fees} \]

Tuition will be charged on a course-by-course basis as follows at 2015-16 rate (increased later as per annual changes): for 3 credits, $1540 for domestic students and $2,433 for international students. Tuition for the certificate (12 CR) will be approximately $6,160 for domestic students and $9,732 for international students.

\[ n) \text{ Current Program Advisory Committee Members (list names and affiliations)} \]

Dr. Maria Gallo, Instructor
Dr. Paul Kennedy, Instructor
Dr. Robert Sparks, Director
Dr. William Sheel, Professor
o) Final Approval Expected from the Following Deans/Department Heads
Dr. Robert Sparks, Director School of Kinesiology
Dr. Blye Frank, Dean of Education

Contact info
School Director
Dr. Robert Sparks, Director of Kinesiology
Email - robert.sparks@ubc.ca
Tel – 604.822.2767

Faculty Lead
Dr. Maria Gallo, Member of Graduate Committee (MKin advisor) & Sr. Instructor
Email – maria.gallo@ubc.ca
Tel – 604.822.5084

Dr. William Sheel, Associate Director Graduate Affairs & Research & Professor
Email - bill.sheel@ubc.ca
Tel – 606.822.4459

Attached:          [Removed for purposes of Curriculum; may be requested.]
UBC Curriculum Proposal Forms
Consultation Forms
Budget and Library Forms
Letters of support
UBC Curriculum Proposal Form
Change to Course or Program

Category: (1)

<table>
<thead>
<tr>
<th>Faculty: Education</th>
<th>Date: Jan. 14, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: School of Kinesiology</td>
<td>Contact Person: Dr. Maria Gallo</td>
</tr>
<tr>
<td>Faculty Approval Date: Sept. 25th, 2014</td>
<td>Phone: 604-822-5084</td>
</tr>
<tr>
<td>Effective Session (W or S): W, T1</td>
<td>Email: <a href="mailto:maria.gallo@ubc.ca">maria.gallo@ubc.ca</a></td>
</tr>
<tr>
<td>Effective Academic Year: 2015</td>
<td></td>
</tr>
</tbody>
</table>

Contact Person: Dr. Maria Gallo
Phone: 604-822-5084
Email: maria.gallo@ubc.ca

URL: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,202,430,0

Present Calendar Entry:
Graduate Programs
...
Students must maintain satisfactory progress as defined by the university for Master’s students.

Graduate Certificate in Orientation and Mobility (O&M)
...

Type of Action: Create a new graduate certificate in High Performance Coaching and Technical Leadership

Rationale for Proposed Change:
The rationale for developing the UBC Graduate Certificate in High Performance Coaching and Technical Leadership is to enable an academic credential to strengthen the profession of coaching, and to provide outstanding ongoing education for technical sport leaders in the Canadian Sport System.

Linking national coaching qualifications to higher education is an important step in the evolution of coaching as a profession. In addition, the increased sophistication of high performance sport has created leadership positions at the national and provincial levels. In these positions, leaders are responsible for developing and overseeing technical programs, and no...
A blended model of residential periods and on-line teaching methods facilitates the participation of candidates from across Canada and around the world. The program is integrated into the sport federations’ national coaching qualifications, providing national certification together with academic credentials. The program will start with a 5-day orientation, introducing the three formal courses (KIN 515, 585 & 586) and establishing work plans for the Directed Field Study (KIN 598). The courses will be delivered online with added synchronous classes scheduled throughout the fall and winter terms. All courses will conclude with a face-to-face session.

Admissions:
Candidates will normally have a Bachelor’s degree in Human Kinetics, Physical Education, Kinesiology or other related field of study with a minimum of 76% in upper division courses, as well as:

- 5 years of coaching experience, including coaching athletes at the national team or Canada Games level, or 5 years as a carded National Team athlete,
- National Coaching Certification Program qualification at level 3 or “Competition Development”,
- recommendation of the National Sport Organization, and
- submission of a portfolio showing an annual training plan the candidate has developed and implemented, other evidence of their practical coaching, and any articles or coaching materials they have produced.
- Alternatively, applicants who do not meet the requirements stated above, but who have had significant formal training and

formal post-secondary program currently exists to prepare candidates for these roles. Market research indicates a high level of interest in specific, university-based qualifications among those currently working in high performance leadership roles, as head coaches, technical directors and performance directors at the national and provincial levels. There was particular interest by those currently in the workforce to have a one-year certificate available to attain these regulated credentials and as a potential stepping-stone towards a full Master’s degree.

The demands on coaches and technical leaders to innovate, to base decisions on current sport science and organizational leadership research, and to design systems that are globally competitive, has created the need to offer more sophisticated and comprehensive preparation.
relevant professional experience, and/or otherwise possess demonstrable knowledge or expertise that would prepare them adequately for successful study in a specific graduate program, may be granted admission on the recommendation of the appropriate graduate program and approval of the Dean of the Faculty of Graduate and Postdoctoral Studies.

Procedures will follow those specified by the University and by the Faculty of Graduate and Postdoctoral Studies.

Certificate Requirements:
Courses: each 3 credits (total 12 credits)
1. KIN 515 - Gap Analysis
2. KIN 585 - Performance Planning
3. KIN 586 - Coaching Effectiveness
4. KIN 598 - Directed Field Studies: Practicum

Graduate Certificate in Orientation and Mobility (O&M)

…
To: Senate
From: Senate Nominating Committee
Re: Adjustments to Committee and Council Memberships
Date: 3 February 2015

The Senate Nominating Committee is pleased to recommend that Senate resolve as follows:

That Ms Sonam Vohra be appointed to the Senate Admissions Committee until 31 March 2015 and thereafter until replaced, to replace Ms Collyn Chan;

That Ms Anne Kessler be appointed to the Senate Teaching and Learning Committee until 31 March 2015 and thereafter until replaced, to replace Ms Nina Karimi;

That Dr Sally Thorne and Dr John Gilbert be elected to the Council of Senates; and

That Dr Lawrence Walker, Dr Susan Forwell, Dr Paul Keown, and Dean Ricky Yada be appointed to Vancouver Senate Committees One, Two, Three, and Five respectively for the purpose of their appointment to the Council of Senates.

Respectfully submitted,

Dr Richard Tees
Chair
Senate Nominating Committee
To: Senate  
From: Senate Nominating Committee  
Re: Adjustments to Committee Compositions  
Date: 3 February 2015  

The Senate Nominating Committee has received a request from the Senate Ad Hoc Committee on Flexible Learning to adjust its composition. In the course of its deliberations, the Ad Hoc Committee has felt that the input of Michelle Lamberson, Director, Flexible Learning Special Projects, Office of the Provost, has been invaluable to their discussions, and her participation in the Committee’s work should be further enabled and encouraged. Presently, the Provost’s Office is represented formally by Vice-Provost Pro Tem, Hugh Brock; however, the Nominating Committee would see no issue with having a second representative added on a non-voting basis.

The Senate Nominating Committee would therefore recommend that Senate resolve as follows:

That the composition of the Senate Ad Hoc Committee on Flexible learning Committee be amended to add:

- Director, Flexible Learning Special Projects, Office of the Academic Vice-President (ex officio) (non-voting)

Respectfully submitted,

Dr Richard Tees  
Chair  
Senate Nominating Committee
6 February 2015

From: Senate Student Awards Committee

To: Senate

Re: New Awards and Changes to Existing Awards (January 2015)

The Student 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.”

ABORIGINAL Student Award in Forestry – Three awards of $3,000 each are offered annually to Aboriginal undergraduate students in the Faculty of Forestry who are in good academic standing. Preference is given to students who have demonstrated a strong commitment to their studies and/or who have had to overcome significant adversity in the pursuit of their university education. These awards are made possible through the support of a private foundation with the intent of increasing the number of Aboriginal forestry professionals. The awards are made on the recommendation of the Faculty of Forestry, in consultation with the First Nations House of Learning. (First Award Available in the 2015/2016 Winter Session)

Professor Bonnie J. CRAIG Award in Dentistry – A $1,000 award is offered annually by the Faculty of Dentistry in recognition of Professor Bonnie J. Craig and her extraordinary dedication and teaching within the Dental Hygiene Program. The award is offered to a second or third year student enrolled in the Dental Hygiene Degree Program who demonstrates leadership within their class. The award is made on the recommendation of the Faculty of Dentistry. (First Award Available in the 2015/2016 Winter Session)

DEPARTMENT of Statistics Award in Data Science – A $1,000 award is offered annually to an undergraduate or graduate student who has demonstrated initiative, creativity and other outstanding contributions in the field of data science. The award is made on the recommendation of the Department of Statistics in the Faculty of Science and, in the case of a graduate student, in consultation with the Faculty of Graduate and Postdoctoral Studies. (First Award Available in the 2014/2015 Winter Session)

Christina and Alan EASTWOOD Scholarship in Land and Food Systems – A $1,000 scholarship has been made available through an endowment established by Christina and Alan Eastwood for a student in the 3rd year of undergraduate studies in Land and Food
Systems with an interest in sustainable food systems. Christina and Alan are now retired from careers as a medical technologist and an economist respectively, and have decades of experience in growing food organically for themselves and friends. They have long recognized the need for a more organic, less toxic, commercial food system. They hope this award will encourage young people to pursue sustainable alternatives to conventional agriculture. The award is made on the recommendation of the Faculty of Land and Food Systems. (First Award Available in the 2015/16 Winter Session)

FOUR YEAR FELLOWSHIPS (4YF) Tuition Award – Recipients of Four Year Fellowships (4YF) may, depending on other funding held by the student, receive a 4YF-funded tuition award. The awards are made on the recommendation of the recipient’s graduate program in consultation with the Faculty of Graduate and Postdoctoral Studies. (First Award Available in the 2015 Summer Session)

FUTURE ACHIEVERS International UBC Entrance Scholarship – A scholarship of $2,600 is made available through an endowment established by Professors Yves and Cynthia Bled to an international student entering UBC in their first year who demonstrates a combination of exceptional academic achievement and extracurricular involvement. Preference is given to members of Future Achievers International, and recipients are encouraged to act as campus ambassadors for the program. Future Achievers International supports, stimulates, and reinforces young future leaders around the world by supporting scholarships and programming that encourage thinking that changes the world. The award is made on the recommendation of the International Student Initiative Office. (First Award Available in the 2015/16 Winter Session)

GIRODAY Family Scholarship in Law – A $3,000 scholarship is offered annually by the Giroday family to a UBC Faculty of Law student in the JD program with high academic achievement in litigation or high achievement in one of the competitive moots. Shirley E. Giroday (JD, 1955), her late husband Michael R. Giroday (JD, 1957), and their sons Patrick J Giroday (LLB, 1987) and M. Ian Giroday (LLB, 1987) are all graduates of UBC’s Faculty of Law with careers in litigation. The awards are made on the recommendation of the Faculty of Law. (First Award Available in the 2015/16 Winter Session)

Dr. Pommy HALLEN Bursary in Dentistry – A $1,000 bursary is offered annually by Dr. Pommy S. Hallen to a student in the Faculty of Dentistry in the third or fourth year of the undergraduate program. Dr. Pommy Hallen is a local endodontist and an alumnus of UBC Dentistry, who wishes to support dental students in financial need. Adjudication is made by Enrolment Services. (First Award Available in the 2015/2016 Winter Session)
INTERNATIONAL LEADER OF TOMORROW Bursary - living costs – Bursaries ranging in value up to the full cost of the student’s living costs are offered upon recommendation by the International Student Initiative to continuing international undergraduate students who were previously awarded the International Leader of Tomorrow Award and continue to demonstrate financial need but do not meet the Senate’s academic criteria for a continuing award. The value of each bursary will depend on the applicant’s financial circumstances. The bursary may be renewed for up to three additional years of undergraduate study or to degree completion, whichever is less, provided the recipient remains an international student on a valid Canadian study permit. Bursary recipients will have their situations reviewed annually by their Faculty as well as Enrolment Services regarding both academic progress and financial need.

INTERNATIONAL LEADER OF TOMORROW Bursary - tuition – Bursaries ranging in value up to the full annual cost of the student’s academic program tuition and fees are offered upon recommendation by the International Student Initiative to continuing international undergraduate students who were previously awarded the International Leader of Tomorrow Award and continue to demonstrate financial need but do not meet the Senate’s academic criteria for a continuing award. The value of each bursary will depend on the applicant's financial circumstances. The bursary may be renewed for up to three additional years of undergraduate study or to degree completion, whichever is less, provided the recipient remains an international student on a valid Canadian study permit. Bursary recipients will have their situations reviewed annually by their Faculty as well as Enrolment Services regarding both academic progress and financial need.

Cody LLED Graduate Student Emergency Award – An annual emergency award fund totalling $5,000 is available, through an anonymous gift to graduate students of the Faculty of Education’s Language and Literacy Education Department (LLED). The fund was established to assist graduate students who are faced with an unexpected financial challenge of a serious nature which impacts their well-being and/or their ability to continue in the program. Candidates must demonstrate that all other possible sources of support have been explored before an application will be considered. All requests are determined on a case-by-case basis and require the recommendation by the Department Head of LLED in consultation with the Head’s Advisory Committee, with input from other faculty as needed. Awards are made on the recommendation of the Department of Language and Literacy Education. (First Award Available in the 2014/2015 Winter Session)

Dr. Michael MACENTEE Bursary in Dentistry – A $1,000 bursary is offered annually by UBC Dentistry in honour of Professor Dr. Michael I. MacEntee, who chaired the Division of Prosthodontics at UBC and established the ELDERS (Elders’ Link with
Dental Education, Research and Service) Group, thereby advancing the teaching and research mission of UBC with a focus on the oral health needs of elders. The bursary is offered to a student in the Faculty of Dentistry in the first, second or third year of the undergraduate program. Adjudication is made by Enrolment Services. (First Award Available in the 2015/2016 Winter Session)

Mary OH Memorial Entrance Bursary in Law – A $1,000 bursary is offered annually to a UBC Faculty of Law student entering their first year of the JD program. The bursary is in memory of Mary Oh, a former UBC student. Adjudication is made by Enrolment Services. (First Award Available in the 2015/2016 Winter Session)

Raja ROSENBLUTH Award for Women in Biological Sciences – A $5,000 award is offered annually by Raja Rosenbluth for a female graduate student studying in the field of Biological Sciences. This award is in honour of Raja Rosenbluth’s long career in the area of Biological Sciences, and recognizes her research, mentorship and guidance of many graduate students with whom she worked. For many years, Raja was one of the very few women in the field of genetics, and it is to be hoped that the recipient of this award will blaze new trails in the area of Biological Sciences. The term “Biological Sciences’ is intentionally broad to include diverse areas within the Faculty of Science comprising but not limited to: Biology, Biochemistry Genetics, Genomics, Molecular Biology, Bioinformation, Ecology and Zoology. This award is for a female graduate student who has shown success in her previous studies and where such an award will significantly help her to pursue her career in the Biological Sciences. The awards are made on the recommendation of the Faculty of Science, in consultation with the Faculty of Graduate and Postdoctoral Studies. (First Award Available in the 2015/2016 Winter Session)

UBC LAW RUGBY Award – Two $1,000 awards are offered annually by alumni and supporters of the UBC Faculty of Law’s rugby club. These awards are offered to students entering their second or third year of the JD program who have shown significant leadership as members of the club. Preference will be given to students who have demonstrated outstanding academic achievement. The awards are made on the recommendation of the Faculty of Law. Students must apply for this award. (First Award Available in the 2015/2016 Winter Session)

G. Gary RUNKA Award in Agricultural Soil Science – A $1,000 award has been made available through an endowment established by family, professional colleagues and friends of Gary Runka for an undergraduate or graduate student in the Faculty of Land and Food Systems. The recipient must be in good academic standing and engaged in field studies of soils or land use and their interpretation for the wide range of land and water uses that impact agriculture. Preference will be given to a candidate whose field project focuses on biophysical information and land capability/suitability interpretation,
mentoring and field knowledge transfer amongst professionals in the soil sciences and/or enhances the contribution of agriculture to building sustainable rural communities. This award is intended to honour G. Gary Runka [BSc. Ag (Soils), 1961] whose contribution to land inventory, agriculture, natural resource management and land use planning helped shape BC land use policy over five decades. Gary was dedicated to the use of field knowledge as the basis for understanding and resolving land and water use issues. The award is made on the recommendation of the Faculty of Land and Food Systems and, in the case of a graduate student, in consultation with the Faculty of Graduate and Postdoctoral Studies. (First Award Available in the 2015/16 Winter Session)

**STEVENS Bursary** – A $1,000 bursary is offered annually by Patricia Stevens to an undergraduate student who has completed their first year of studies, with preference given to students in the Sciences. Patricia Stevens established this bursary to honor the Stevens family, particularly Joan and Lloyd Stevens who strongly encouraged and supported their two children – Gary and Patricia – to attend university, understanding the importance and value of an education throughout one’s life. Without their assistance, both financial and emotional, their children would not have been able to attend post-secondary education. Joan and Lloyd met in Prince Rupert, where they lived and raised their children. Lloyd had a commercial refrigeration business and Joan ran its business office. On retirement, they moved to Oliver in the sunny Okanagan. Although neither had attended university, both felt strongly that their children should. Always supportive of community, Joan and Lloyd gave back in many ways. In keeping with family tradition, this bursary is offered to assist an undergraduate student in need of financial assistance. Adjudication is made by Enrolment Services. (First Award Available in the 2015/2016 Winter Session)

**David TARRANT Academic Achievement Award** – An award up to $1,250 has been made available through an endowment established by the University’s Friends of the UBC Botanical Garden, friends and colleagues in honour of David Tarrant and his many contributions to the University’s Botanical Garden. The award will be provided to the student in the highest academic standing in the Horticultural Training Program. Awards are made on the recommendation of the Program Director and Director of the UBC Botanical Garden and Centre for Plant Research. (First Award Available in the 2015/16 Winter Session)

**David TARRANT Most Improved Award** – An award up to $750 has been made available through an endowment established by the University’s Friends of the UBC Botanical Garden, friends and colleagues in honour of David Tarrant and his many contributions to the University’s Botanical Garden. The award will be provided to the student demonstrating the most improvement throughout the duration of the Horticultural Training Program. Awards are made on the recommendation of the Program Director and
Director of the UBC Botanical Garden and Centre for Plant Research. (First Award Available in the 2015/16 Winter Session)

**Dr. Joanne WALTON Award in Dentistry** – A $1,000 award is offered annually by the Faculty of Dentistry in honor of Dr. Joanne Walton, whose extraordinary dedication to teaching and research has been instrumental in the continued success and mission of UBC Dentistry. The award is offered to a third or fourth year DMD student who shows academic excellence and a proficiency in the area of prosthodontics. The award is made on the recommendation of the Faculty of Dentistry. (First Award Available in the 2015/2016 Winter Session)

**Donald WEHRUNG International Student Bursary - living costs** – Bursaries ranging in value up to the full annual cost of the student’s living costs are offered upon recommendation by the International Student Initiative to continuing international undergraduate students who were previously awarded the Donald Wehrung International Student Award and continue to demonstrate financial need but do not meet the Senate’s academic criteria for a continuing award. The value of each bursary will depend on the applicant's financial circumstances. The bursary may be renewed for up to three additional years of undergraduate study or to degree completion, whichever is less, provided the recipient remains an international student on a valid Canadian study permit. Bursary recipients will have their situations reviewed annually by their Faculty as well as Enrolment Services regarding both academic progress and financial need.

**Donald WEHRUNG International Student Bursary - tuition** – Bursaries ranging in value up to the full annual cost of the student’s academic program tuition and fees are offered upon recommendation by the International Student Initiative to continuing international undergraduate students who were previously awarded the Donald Wehrung International Student Award and continue to demonstrate financial need but do not meet the Senate’s academic criteria for a continuing award. The value of each bursary will depend on the applicant's financial circumstances. The bursary may be renewed for up to three additional years of undergraduate study or to degree completion, whichever is less, provided the recipient remains an international student on a valid Canadian study permit. Bursary recipients will have their situations reviewed annually by their Faculty as well as Enrolment Services regarding both academic progress and financial need.

**Previously-Approved Awards with Changes in Terms or Funding Source:**

**#7964 Old Boy/Girl Network Bursary** – Bursaries totaling $2,950 have been made available through an endowment established by a number of MBA alumni to support students in the MBA or MScB Business Administration programs who are single parents,
recognizing the difficulties of being single parents and students. If no suitable candidates are found, the award will be held over and utilized in a subsequent year.

**Why and how amended:** Change recommended by Enrolment Services to ensure an eligible candidate for this award. The award hasn’t been awarded since 2007 due to specific year of study being part of the criteria for the award. The recommended change is to open the award up to single parents in any year of their MBA or MSC studies, thus making the award awardable.

**#6456 Four Year Fellowships (4YF) For Doctoral Students** – Fellowships, whose value may be up to $18,000 (adjusted for inflation) plus tuition per year, are offered by UBC to full-time doctoral students for up to four years of their doctoral program. Continued Fellowship support is subject to satisfactory academic progress. Students who receive Tri-Agency or other prestigious external awards must accept those awards. The awards are made on the recommendation of the recipient’s graduate program in consultation with the Faculty of Graduate and Postdoctoral Studies.

**Why and how amended:** The revised wording reflects changes in the 4YF program since it was first established in 2009 Summer Session. Graduate and Postdoctoral studies currently assign both stipend and tuition funding under a single award number (#6456) for the 4YF program. To provide students with a clearer understanding of their funding and to separate the two funding streams administratively, the Faculty would like to use the existing 4YF award (#6456) for the stipend funding only, and use the new award for the tuition portion of the fellowship.
6 February 2015

To: Senate
From: Kate Ross, Associate Vice-President Enrolment Services & Registrar

Re: 2015/2016 Academic Year


Key dates for the 2015/16 Winter Session are as follows:

**Term 1**
- Tuesday, 8 September 2015  
  Term 1 begins
- Friday, 4 December 2015  
  Last day of Term 1 classes for most faculties
- Tuesday, 8 December 2015  
  First day of exams for Term 1
- Tuesday, 22 December 2015  
  Last day of exams for Term 1

Number of Teaching Days: 61

**Term 2**
- Monday, 4 January 2016  
  Term 2 begins
- 15-19 February 2016  
  Midterm Break
- Friday, 8 April 2016  
  Last day of Term 2 classes for most faculties
- Tuesday, 12 April 2016  
  First day of exams for Term 2
- Wednesday, 27 April 2016  
  Last day of exams for Term 2

Number of Teaching Days: 62

Draft term and examination dates for academic years up to and including 2020/21 may be viewed here: [http://senate.ubc.ca/vancouver/termdates](http://senate.ubc.ca/vancouver/termdates)
The Library continued on its path during this fourth year of its strategic plan in offering new and ongoing programs and services. We began the year with priorities that focused on transforming library spaces to accommodate evolving learning and research needs. New student pavilions were constructed in the Irving K. Barber Learning Centre, creating more opportunities for students to congregate for individual and group study and to access peer-to-peer services such as Coaching and Tutoring.

This year also saw the Library partnering with UBC IT to deliver IT services. As a mutually beneficial relationship, the Library will be able to have its interests represented at the IT campus-wide level and UBC IT will be able to take advantage of enterprise wide resources and infrastructure to help the Library better support the technology needs of faculty and students.

In our ongoing efforts to address key findings from the UBC Workplace Experiences Survey as well as from previous Library External Reviews, a Workplace Culture Review by a renowned team of consultants was conducted this year. Improving the workplace culture requires the commitment and attention of all Library staff, and this work will continue well into the next few years.

This was also the second year of a three-year deficit reduction plan. The Library continues to work together with the VP, Finance and the Provost’s office to identify sustainable budget models.

And these were only a selection of the activities that we had initially planned for the year. In addition, the Library added to its physical and digital collection, and strengthened our ties with the First Nations and Asian communities through signature events and activities. Indeed, this year’s Senate Report shows that the Library is revving up as it heads into 2014/15 and the conclusion of our strategic plan.

A sincere thank you to all our stakeholders for your support, and to the Library staff for their dedication in achieving the results described in these pages.
This was a milestone year for additions to the Library’s collections, a major intellectual resource for the university. Major acquisitions to our Rare Books and Special Collections included a photography collection of early B.C. history and a medieval manuscript that dates back to the 14th century. In addition, public access to the much-loved Videomatica collection became available at UBC’s Koerner Library.

We also continued to make progress with digitizing 45 of our collections to support teaching, learning and research at UBC and beyond. Lastly, the Library received university approval to begin construction of a new collections storage facility as part of its long-term strategy for storage, access and preservation.

**Manuscript’s impact spans centuries**

Aided by the expertise of a UBC instructor who specializes in early European medieval history, the Library acquired a manuscript whose scholarly impact stretches across the centuries. The main piece in the gorgeous bound text – which originates in France and was copied sometime in the 14th century, possibly during the time of the Black Death pandemic – is called the *Compendium Theologicae Veritatis* (or *Compendium of Theological Truth*). The Library acquired the manuscript from an antiquarian bookseller in London, England; it’s housed at Rare Books and Special Collections (RBSC), located on level one of the Irving K. Barber Learning Centre.

This work, an introduction of sorts to theology and the oldest book in UBC Library’s collections, was a highly popular tome for university students more than 700 years ago. At UBC it is destined to become a vital classroom text once again – this time for UBC history students enrolled in Department of History undergraduate classes spanning the early, central and late Middle Ages. The text has already been used as a valuable teaching tool in these courses.

- View the press release announcing the acquisition of *Compendium Theologicae Veritatis*.
- View the online Flickr gallery featuring images related to the medieval manuscript.
- View media coverage about the manuscript acquisition.

**Videomatica Collection Launches at UBC and SFU**

Videomatica’s legendary film collection became accessible for borrowing from UBC and SFU libraries in January 2014. The unparalleled collection spans more than 35,000 titles, including feature films from more than 75 countries, documentaries, cult and art films, Canadian works and selections from the Vancouver International Film Festival. UBC and SFU acquired the $1.7-million collection after Videomatica’s 2011 closure, due to a donation and purchase agreement brokered by Vancouver philanthropist Yosef Wosk. UBC received 28,000 movie DVDs, 4,000 VHS titles and 900 Blu-rays, and SFU received more than 2,500 documentaries.

- View the joint press release issued by UBC and SFU.
- View media coverage of the Videomatica announcement.
This albumen print, “Colonial Hotel, Soda Creek” is from a complete album of photographer Frederick Dally, circa 1867.

COLLECTIONS

Langmann photo collection donated to UBC
A treasure trove of rare historical photos from the early days of British Columbia will be preserved, digitized and made public, thanks to a $1.2 million gift from a Vancouver art collector to UBC. The Uno Langmann Family Collection of B.C. Photographs, donated by Uno and Dianne Langmann, consists of more than 18,000 rare and unique early photographs from the 1850s to the 1970s. It is considered the premiere private collection of early provincial photos, and an important illustrated history of early photographic techniques. Images from the collection are being digitized and updates on the digitization of the collection will announced on the Library’s website. Faculty and students are also able to request items from the collection through the Library’s Rare Books and Special Collections unit.

- View the press release announcing the Uno Langmann Family Collection of B.C. Photographs.
- View an online Flickr gallery featuring select photos from the collection.
- View media coverage about the Langmann announcement.

Digitized Collections
The Library’s Digitization Centre officially opened in 2011 with the goal of creating sustainable, world-class programs and processes to make the collections and research at UBC available to the world and to ensure the authentic, long-term preservation of these digital holdings for the future. Locally hosted collections saw more than 300 website visits per day with visitors from more than 100 countries accessing rare and unique UBC Library holdings. Indeed, as the Library’s digital collections grow in popularity and recognition, the number of online visits has grown steadily, with more than 124,000 visits in 2013.

Digitized collections contain materials which directly support the UBC curriculum and which are rare and unique. While the priority of digital projects is based on their value to researchers at UBC, the online nature of the digitized collections means access to anyone with a desire for knowledge or a sense of curiosity about the Library’s full range of collections.

A selection of the Library’s digitized collections that were completed during 2013/14:

BC Sessional Papers
In partnership with the Legislative Library of British Columbia, the Library has digitized the first 10 years (1876-1886) of the British Columbia Sessional Papers. The collection includes maps, annual reports, land sales, voter records, proclamations and more. Members of the British Columbia Research Libraries Group (University of Victoria, University of Northern British Columbia, Simon Fraser University and UBC) worked together to provide access to these significant documents; the Legislative Library provided the physical volumes that were digitized.
COLLECTIONS (cont’d)

Metro Vancouver Land Use Map Series
The Library completed digitizing a Metro Vancouver land use map series which consisted of 596 detailed maps produced from the 1970s – 1980s by the Greater Vancouver Regional District. The maps are used by urban planning and geography students and are frequently consulted by the local business community, including environmental engineers, site remediation consultants and property development firms.

Tremaine Arkley Croquet Collection
A collection of fascinating illustrations, engravings, photographs, cartoons and paintings about the history of croquet (circa 1850 – 1950) was donated by Tremaine Arkley, a former player for the U.S. National Croquet Team to the Library several years ago. Digitization of the Tremaine Arkley Croquet Collection was completed this past year. This is not just a collection about croquet; rather, its multidisciplinary depth spans into topics such as gender studies, athletics, social economics, art history and photography. An event was held to show physical pieces from the collection as well as the digitized images. Guests included Mr. Arkley and his family as well as members from the Vancouver Croquet Club and the former AMS Croquet Society.

Approval for Library Preservation Archives
In addition to the Automated Storage Retrieval System (ASRS) located in the Irving K. Barber Learning Centre, the Library received approval this past year to begin construction on Library Preservation Archives (Library PARC) a new modular, high-density storage and preservation facility to accommodate the future growth of library collections by storing low-use items. Even in a digital age, UBC Library’s print collections continue to grow and require a long-term strategy for storage, access and preservation. Increasingly, North American research libraries are using high-density storage facilities to address these needs.

PARC will be located in UBC Vancouver’s South Campus in the Research precinct and be completed in mid-2015. When complete, Library PARC will provide 2,280 square metres of high-density collection storage, capable of housing about 1.6 million volumes. Library PARC is estimated to cost about $10.5 million, funded jointly by the Library and UBC. The facility will also include a campus-wide records management service, a small digitization facility, a contained freezer area for decontamination; a staff work area and a publicly accessible reading room.

- View FAQs about Library PARC.
- View the Library PARC live webcam.

New Library Conservator
As UBC Library expands its varied and unique collections, preservation and conservation activities become ever more significant to ensure collections are accessible for years to come. The Library hired Anne Lama as its first Conservator this year to oversee the Library’s conservation program. Working closely with staff in Rare Books and Special Collections, University Archives and the Digitization Centre, Lama oversees the treatment of individual items as well as collection-level projects. She has also provided in-house training to library staff and developed Preservation Week programming on campus and for elementary schools.
TEACHING AND LEARNING

The Library continues to support the development of life-long information literacy skills in an increasingly information-intensive world. The Library provides its users with instruction that not only addresses how to access and use information, but also how to critically analyze the information retrieved. But increasingly, the Library has been tapped for its expertise in course support, copyright and rights permission and other areas that have opened up with flexible learning initiatives on campus.

The Library’s Scholarly Communications and Copyright Office (SCCO) provides a range of services – including faculty course support, rights and permissions assistance, and workshops and educational resources - to support UBC faculty, staff and students in the preparation of their course materials, presentations, and publications.

Coursera MOOC Support
UBC launched four Massive Open Online Courses (MOOCs) through Coursera in 2013, with plans to launch more in 2014. Library staff have worked in collaboration with the Centre for Teaching and Learning Technologies (CTLT) to guide MOOC developers through complex questions and issues that arise from copyright. As a result, targeted copyright guidelines have been developed for MOOC developers and ongoing workshops on best practices for using copyrighted materials in open courses continued throughout the academic year.

Impact of the Library’s Teaching and Learning

- In 2013/14, more than 35,000 students participated in 1,450 classes led by librarians and library staff on topics including information literacy, citation management, thesis formatting, copyright, social media and how to use digital collections.
- In 2013/14, 111 peer student leaders facilitated 24,660 in-person interactions with students at the Chapman Learning Commons.
- The SCCO experienced growing demand for faculty course support services in 2013/14, completing a total of 620 public services interactions, an increase of 20% more activity than the previous year.

Figure 1: Library instruction sessions and participants, 2009 - 2014.

In 2013/14, 85% of participants attended course-integrated sessions that complement specific UBC courses.

<table>
<thead>
<tr>
<th>Most visited tutorials, 2013/14</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to cite</td>
<td>35,118</td>
</tr>
<tr>
<td>Evaluating information sources</td>
<td>27,380</td>
</tr>
<tr>
<td>Journal articles</td>
<td>11,780</td>
</tr>
<tr>
<td>RefWorks Write-n-Cite</td>
<td>11,059</td>
</tr>
<tr>
<td>Using Summon</td>
<td>8,788</td>
</tr>
</tbody>
</table>

Figure 2: Most Visited Online Tutorials, 2013/14. UBC Library’s online instruction resources enhance student learning anywhere, at any time with more than 50 tutorials available.
Copyright and Scholarly Communications Highlights

The Scholarly Communications and Copyright Office (SCCO), in consultation with the Office of the University Counsel, supports the UBC community by publishing UBC’s copyright guidelines and providing information that assists community members navigate new developments in copyright law and scholarly publishing. The SCCO provides information and a range of services to support faculty, staff and students in the preparation of course materials, presentations and publications.

SCCO staff provide in-depth consultations and course material reviews for faculty, staff and graduate students both remotely (phone and email) and in-person. Course reviews involve assessing instructional materials for copyright compliance, as well as assisting the resolution of related copyright concerns in consultation with the course instructor. Once UBC faculty and staff submit their reading requests, the SCCO provides feedback and the options available to make those readings available.

![Figure 3: Number of Copyright determinations, 2013 - 2014.](image)

The, 3,126 assessments are broken down by our usage of the fair dealing exception, transactional permissions from rights holders, and links to publically available online content.

Weblinks are assessed to ensure the legitimacy of the linked content (i.e., to ensure that the content was uploaded by or with permission of the copyright owner).

The chart below indicates several of the options available to make readings available, and their prevalence.

![Figure 4: Number of consultations by complexity and contact method.](image)

Comprehensive consults take over one hour and typically involve several interactions with the user.

Advanced consults require advanced subject expertise and dialogue with the user.

Intermediate consults require subject familiarity and use of several information sources.
TEACHING AND LEARNING

SCCO also provides copyright and permissions support to campus-wide initiatives including flexible learning and the Library's efforts to support open access publishing. This past year, the SCCO developed new iterations of the UBC Copyright and Scholarly Communications website with a range of updated guides and educational resources for the university community. This coincided with a new series of instructional workshops including well-attended sessions on copyright and the digital environment, open access publishing, and author rights and funder mandates.

In September 2013, it was reported that UBC students enjoyed an average 33% reduction in the price of course packs through the UBC Bookstore due in part to the Library working with the Bookstore to ensure that digitally licensed materials were incorporated into course packs.

TLEF Grants 2013/14

UBC's Teaching and Learning Enhancement Fund (TLEF) supports and encourages innovation in teaching and the learning environment. The Library applies for and receives TLEF funding on a yearly basis. The Library successfully received two grants for the 2013/14 year - the first to expand the graduate Research Commons in Koerner Library and the second to create Asian-language citation guides through the Asian Library. More details about the Library’s TLEF projects can be found online.

RESEARCH

The Library is critical to the research endeavour, connecting faculty and students with local and global information resources and enables new forms of knowledge creation, dissemination and exchange. The Library’s research endeavours for the past fiscal year included beneficial collaborations with campus and other institutional colleagues to provide wider dissemination of UBC’s research outputs.

UBC Fish Collection goes Global

In 2014, thousands of “fish notebooks” containing valuable research data were available for online viewing as a result of a project between the Library’s Digitization Centre and UBC’s Beaty Biodiversity Museum. The collaborative effort involved the transcription of more than 11,200 notebooks containing extensive environmental data on the UBC Fish Collection. The collection is the third largest of its kind in Canada with more than 850,000 specimens and more than 50,000 DNA and tissue samples with some of the resulting records more than a century old.

Data from this project will be used for environmental assessments, conservation efforts, understanding the factors influencing the formation and extinction of species, and more. Future plans include meeting with Fishbase, a self-described “global information system on fishes” located in the Phillipines, to discuss incorporating the digital notebook records into its database.
RESEARCH

Collaborative cataloguing project wins CLIR grant
The Library became a supporting partner in a collaboration led by the University of Washington (UW) funded by a grant from the Council on Library and Information Resources (CLIR) - supported by the Mellon Foundation. The Cataloguing Hidden Special Collections and Archives grant, worth $183,500, is for a project entitled “Discovering Modern China: University of Washington (UW) & University of British Columbia (UBC) Collections.” This marks one of only two international collaborative efforts funded by the Washington, D.C.-based CLIR, and the first involving a Canadian university. This project involves the cataloguing of rare Chinese-language materials at the UW’s East Asia Library and UBC’s Asian Library. Work will begin during the summer of 2014 and conclude within 18 months; when finished, up to 2,000 special Chinese publications – including pre-modern texts and rare publications of the Chinese Republican era – will be made accessible to scholars worldwide. More information is available at the Council on East Asian Libraries (CEAL) News blog.

cIRcle Ranking
UBC’s digital repository, cIRcle, became the #1 ranked repository in Canada; globally, cIRcle consistently ranks in the top 5 of Canadian repositories according to research by the Cybermetrics Lab in Spain. In North America, cIRcle is ranked #12, and #29 internationally out of 1,660 institutional repositories as of February 2014. By making UBC scholarship openly available, cIRcle ensures that UBC research is promoted and shared as widely as possible.

cIRcle Highlights for 2013/14
• In 2013, UBC research in cIRcle was accessed from nearly every country in the world.
• There are currently more than 44,732 items in cIRcle as of March 2014.
• The top three academic unit content contributors for 2013/14 are: Applied Science, Education, and Science.

Graduate and undergraduate students have also responded favourably to cIRcle as a destination to openly share their work. Graduate students are required to deposit their theses and dissertations into the Electronic Theses and Dissertations (2008+) collection. As of April 2014, there are more than 7,300 items in this collection, making it a rich student-learning environment.

BIRS Lecture Series Available through cIRcle
A recent highlight for cIRcle was the inclusion of videos from the lecture series of the Banff International Research Station for Mathematical Innovation and Discovery (BIRS). The series produces 20 lectures per week, 49 weeks of the year with approximately 1,000 files per year requiring 8 terabytes of storage. The Library’s role includes processing the videos, identification and resolution of licensing, metadata and multimedia digital preservation issues. The end result in cIRcle is the first large-scale project to digitally preserve and disseminate math research output in video format. International math scholars can now access the lecture series directly through cIRcle.

cont’d
RESEARCH
(cont’d)

Library Support for Campus Research Data Management
The Library has been assessing UBC’s readiness to respond to initiatives requiring research data management and curation. A pilot project involving the Library, UBC IT, the Office of Research Services and the Centre for Hip Health and Mobility (CHHM) studied the data requirements of a complex research group on the campus. The project was selected due to the breadth and scope of research data that was acquired, generated, analyzed, stored and disseminated by its researchers. An information-based research data management website was launched in the summer of 2013 and recently updated to provide tools to assist with data management work for campus users. Several Data Cafes were held during the fall to increase the knowledge base of library staff so that they are ready to support researchers.

Supporting Open Access Activities
While UBC Senate at both Vancouver and Okanagan campuses only approved the UBC Open Access Position Statement in 2013, the Library has been at the forefront in promoting open access and open educational resources. The Library uses Open Access Week annually as a platform to bring in workshops, seminars and guest speakers for the campus community.

• Vancouver Campus: Open UBC activities included presentations on open access journals, flexible learning, and a 3D printing demo. Guest speakers for 2013 included Peter Binfield (PeerJ) and Mary Burgess (BCCampus) as well as student representatives from the Alma Mater Student Society of UBC and the Graduate Student Society.

• Okanagan Campus: An Open Access Hall of Fame was created to recognize those who use open access when disseminating their research. Twenty-four faculty members, graduate students, and librarians provided research publications in disciplines ranging from Engineering to Fine Arts.

Photos from Open UBC week UBC-V campus (l-r): display on the price of journals, 3D printing in action, and Ingrid Parent welcoming attendees.
UBC OKANAGAN CAMPUS LIBRARY

Okanagan #morelibrary Campaign
Over the past year, the UBC Okanagan Library has been running the #morelibrary campaign. Developed and launched in the fall of 2013, the campaign solicited feedback about the library from the Okanagan Campus community. Though the campaign largely targeted students, staff and faculty members were also welcome to participate in the process. The campaign asked Okanagan library users to answer "What more do you want from your library?" through online and social media platforms. Over the past year, there have been more than 400 responses to the #morelibrary questions which have resulted in improvements to the Okanagan library based on many of the suggestions (view the results in appendix G). The #morelibrary campaign will continue through the 2014/2015 academic year, encouraging students and faculty to continue to think about their library.

Okanagan Historical Society Annual Reports
Nearly 70 volumes of the Okanagan Historical Society’s annual reports were digitized by the Library at UBC-V. The publication is one of the longest, continually published historical periodicals in B.C. and covers a large geographic area of the Okanagan Valley, extending from Salmon Arm in the north to Osoyoos in the south. With more than 15,000 pages dating from 1926 to the present available online, this digital collection was the most visited resource on the Library’s collection website with online users from across the globe.

Reciprocal Borrowing with Okanagan College
Students, faculty, and staff at UBC Okanagan are now able to access the resources of Okanagan College (OC) Library more quickly and easily. In the fall of 2013, UBC Okanagan Library signed an official agreement with Okanagan College Library to formalize and enhance the practice of reciprocal borrowing between the two institutions. Though faculty, students, and staff of UBC and OC have had onsite borrowing privileges since September 2005, the new agreement simplifies and improves the process, ensuring students and faculty researchers always have access to the best material needed for their research as conveniently as possible. The agreement allows users to utilize their own institution's card to borrow from either library, as well as order books to be transported from any of the OC campus libraries to UBC Okanagan Library. This agreement has resulted in increased access to resources for faculty, students, and staff and has allowed commuter students to access UBC Okanagan Library materials at their closest library.

COMMUNITY ENGAGEMENT AND OUTREACH

UBC Library welcomes the Pacific Rim Digital Library Alliance
As host to the 2013 meeting of the Pacific Rim Digital Library Alliance (PRDLA) in October, the Library welcomed visitors from 31 academic institutions on both sides of the Pacific. In addition to providing an opportunity to showcase the Library’s digital projects, the annual PRDLA meeting is a significant learning opportunity. Library staff learned about advances in data visualization technology, and institutional repositories that have evolved into research information systems. PRDLA members also discussed best practices for sharing and managing information access while respecting the cultural traditions of indigenous peoples.

Aboriginal Engagement
The Library held its second-annual Aboriginal UnHistory Month in June 2013, which focused on ways UBC Indigenous scholars are bridging communities and transforming academic spaces through Indigenous approaches to research. Campus and community
partners teamed up for an exhibit in the Irving K. Barber Learning Centre to bring awareness to issues such as language and literacy education, aboriginal medicine and health, and Indian Residential Schools.

In September 2013, UBC participated in the Truth and Reconciliation Commission (TRC) of Canada’s national events in Vancouver. The Library contributed by highlighting the Indian Residential Schools in different contexts. Its online research guide on Indian Residential Schools in Canada offered background information on this important and sensitive part of Canada’s history and also highlights UBC’s Indian Residential School Initiative. During this time, staff at Xwi7xwa Library provided support and information to residential school survivors and their families and staffed an information booth at the First Nations Longhouse for campus and community members.

Other events created to support the TRC included a reading by author Richard Wagamese from his novel *Indian Horse*, which recounts the harrowing story of a residential school survivor. The event was well attended and [webcast](#) for later viewing as part of the Learning Centre’s webcast program. In addition to aboriginal collections displays at Asian, Education and Koerner libraries, there was also a collaborative exhibit with several campus partners including the Museum of Anthropology, the Centre for Teaching, Learning and Technology, Xwi7xwa Library, the First Nations Studies Program, the First Nations Language Program and the Musqueam Indian Band.

### Research Collaborations

UBC’s Asian Library and its rare and special collections continue to draw interest and praise from international researchers and pave the way for unique partnerships, prompting applications to the Mellon Curatorial Program. In recent years, we have had visiting delegates from institutions such as the China National Library, Taiwan National University and the China Academic Digital Associative Library – all of whom have noted the rarity of several Library titles which were of significant historical importance to China, especially the unique and comprehensive *Puban* and *Pang Jingtang* collections.

### Alumni access to electronic resources

UBC alumni can now access some Library resources both on- and off-site, thanks to a partnership initiative with [Alumni UBC](#). Recent licensing benefits include access to EBSCO Academic Search and Business Source Alumni Editions for all UBC alumni. This database provides access to more than 4,150 full text journals. Alumni can access the content once they register their A-Card using the [online portal](#).

### Small Business Accelerator Program

Created by subject experts at UBC Library and an initiative of the Irving K. Barber Learning Centre, the Small Business Accelerator (SBA) program provides current content to support the start-up market research needs of BC entrepreneurs. In October 2013, the SBA partnered with Entrepreneurship at UBC ([e@UBC](#)) to offer secondary market research support, as well as digital content curation services to support flexible learning environments. SBA library staff offer business research support to the [Entrepreneurship 101 course](#), the [Lean Launch Pad workshop series](#), in addition to aiding the development of e@UBC Online, which aims to be an online platform for self-directed learning and venture creation. Aspiring entrepreneurs can access essential online courses and resources to help augment their growth and development. The SBA maintains an online collection of targeted Accelerator Guides spanning over 100 industries.
CAPITAL CAMPAIGN UPDATE

UBC Library raised more than $2.4 million during 2013/14 through donations and gifts-in-kind from generous supporters. This funding has helped support collections, spaces, services and programs for faculty and students, and contributes to start an evolution, UBC’s fundraising and alumni engagement campaign.

- The Library’s start an evolution campaign goal is $25M.
- The total raised for Fiscal 2013/2014 was $2,467,520.
- Overall, the total raised as of March 31, 2014 for the campaign is $19,506,764 (78% to goal).

Over the coming year, the Library will continue to focus on in-kind gifts, digitization projects as well as on several priority space projects at the Vancouver campus:

Asian Library
Since its inception in 1960 with the acquisition of the notable Puban collection, the Asian Library has developed into the largest research collection of Asian language materials in Canada. The Asian Library remains a top capital campaign priority with plans to reinvigorate the current facility, provide updated programming, inspirational spaces, and a research-intensive teaching and learning and community engagement centre for Asian cultures at the University.

Koerner Library
The development of a centre for digital scholarship in Koerner Library acknowledges the key role the Library has on campus in providing copyright services, supporting open access, maintaining the digital repository for the University’s scholarly output and providing technology rich learning spaces for students and faculty. This integrated space will also include the graduate-student focused Research Commons, which provides services that include thesis formatting, citation management, statistical software support, and workshops and events.

Woodward Library
Woodward Library is the only science research library on the UBC campus and the largest in Western Canada. Plans include transforming Woodward Library into an interactive research laboratory, providing state-of-the-art technology equipment, additional silent and group study areas, and re-activating signature rooms (such as the Sherrington Room and Memorial Room) in the Library for multiple purposes.
ENVISIONING THE FUTURE

In looking at the future, one always hopes it will be bigger and better. 2015 will mark the end of the Library’s five year strategic plan. While there have been many exciting and innovative developments, this next year will be challenging as internal and external factors put pressure on the Library’s strategic and operational activities.

Broader budget cuts, the inflation increases charged by major publishers, and the fluctuating currency exchange continue to affect the Library’s budget. This is not a new situation for academic research libraries in North America; however, we continue to seek a sustainable budget model and align our available resources with the research and teaching needs of faculty and students.

While the budget remains foremost in our minds, the Library is well positioned to expand its role and expertise in two burgeoning areas on campus: records management and research data management.

The Library has proposed a centralized Records Management program for UBC as a means to adopt a consistent approach to records management and to mitigate corporate risk. Plans are also underway to providing research data management services, building on our relationships with UBC IT (in particular the Research Computing Services Team), the Office of Research Services and various faculties and departments.

UBC will be celebrating its centenary in 2015/16 and the Library is one of several academic units who will also mark its 100th anniversary during the same time. This is a unique opportunity to work with our campus colleagues to profile how the Library has contributed to research, teaching, learning and student life and also provides an opportunity to open our doors to community users, supporters, and external partners. A Library Centenary Working Group, which I chair, has been struck and a calendar of Library events for 2015/16 has been prepared.

We are all looking forward to the opening of our new PARC facility, as well as receiving and acting on the observations to be made through the External Academic Review process. These, and other developments, will inform the extension to the Library’s new strategic plan.

While the conclusion of the Library’s 2010 – 2015 Strategic Plan may render us somewhat nostalgic, there are many opportunities already set in motion and the Library will continue to be a catalyst and leader on campus and in the community as it plans for its future in close association with University administration, faculty and students.

Respectfully submitted,

Ingrid Parent
University Librarian
Appendix A

LIBRARY STAFF

(April 1, 2013–March 31, 2014)

HEADS AND BRANCH LIBRARIANS
Assessment – Jeremy Buhler
Biomedical Branch Library – Dean Giustini
Borrower Services, Circulation – Lynne Gamache
Borrower Services, Interlibrary Loan – David Winter
Chapman Learning Commons – Julie Mitchell
Collections – Jo Anne Newyear Ramirez
Communications and Marketing – Linda Ong
David Lam Management Research Library – Jan Wallace
Education Library – Chris Ball
Humanities and Social Sciences Division – Trish Rosseel
Irving K. Barber Learning Centre – Simon Neame
Law Library – Sandra Wilkins
Library Development - Leslie Fields
Library Digital Initiatives – Allan Bell
Library Systems and Information Technology – Renulfo Ramirez
Music, Art and Architecture Library – Acting Head, D. Vanessa Kam
Rare Books and Special Collections – Acting Head, Katherine Kalsbeek, Acting Head, Chris Hives (effective Sep. 1, 2013)
Technical Services – Alvan Bregman
UBC Okanagan Campus Library – Heather Berringer
University Archives – Chris Hives
Woodward Library – Aleteia Greenwood
Xwi7xwa Library – Ann Doyle

LIBRARY EXECUTIVE TEAM
University Librarian – Ingrid Parent
Deputy University Librarian – Melody Burton
Associate University Librarian, Collections – Jo Anne Newyear Ramirez
Associate University Librarian, Planning and Community Relations – Leonora Crema (until Dec. 31, 2013)
Associate University Librarian, Research Services – Lea Starr
Associate University Librarian, Library Systems and Information Technology – Renulfo Ramirez
Director, Communications and Marketing – Linda Ong
Director, Finance and Facilities – Jean-Paul Eidsvik
Director, Human Resources – Keith Kawa
Director, Irving K. Barber Learning Centre – Simon Neame
Director, Library Digital Initiatives – Allan Bell

provided by Library Human Resources
# Appendix B

**LIBRARY STATISTICAL SUMMARY (includes Okanagan Campus)**

*(April 1, 2013 – March 31, 2014)*

<table>
<thead>
<tr>
<th>Library Collections</th>
<th>2013-14</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total volumes</td>
<td>7,499,976</td>
<td>7,062,032</td>
</tr>
<tr>
<td>Total physical volumes (excluding e-books)</td>
<td>5,656,948</td>
<td>5,604,940</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Digital Collections</th>
<th>2013-14</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-books</td>
<td>1,843,028</td>
<td>1,457,092</td>
</tr>
<tr>
<td>E-journal titles</td>
<td>331,343</td>
<td>229,020</td>
</tr>
<tr>
<td>cIRcle (includes e-theses)</td>
<td>44,732</td>
<td>42,815</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Formats</th>
<th>2013-14</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archives (metres)</td>
<td>4,322</td>
<td>4,225</td>
</tr>
<tr>
<td>Audio/visual, cartographic, graphic</td>
<td>923,399</td>
<td>898,901</td>
</tr>
<tr>
<td>Microforms</td>
<td>5,341,639</td>
<td>5,331,077</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Services</th>
<th>2013-14</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching and Learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classes</td>
<td>1,464</td>
<td>1,768</td>
</tr>
<tr>
<td>Participants</td>
<td>35,638</td>
<td>41,527</td>
</tr>
<tr>
<td>Total questions answered</td>
<td>114,930</td>
<td>144,852</td>
</tr>
<tr>
<td>Online reference</td>
<td>11,740</td>
<td>14,011</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Research</th>
<th>2013-14</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-book use (section downloads)*</td>
<td>5,776,887</td>
<td>5,284,463</td>
</tr>
<tr>
<td>E-journal use (article downloads)*</td>
<td>8,837,144</td>
<td>8,369,842</td>
</tr>
<tr>
<td>Loans (includes renewals)</td>
<td>1,470,112</td>
<td>1,598,753</td>
</tr>
<tr>
<td>In-person visits**</td>
<td>3,745,028</td>
<td>4,023,093</td>
</tr>
<tr>
<td>Website visits***</td>
<td>10,808,522</td>
<td>&quot;&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Staff (FTE)</th>
<th>2013-14</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Librarians</td>
<td>88</td>
<td>94</td>
</tr>
<tr>
<td>Management and Professional (M&amp;P)</td>
<td>43</td>
<td>41</td>
</tr>
<tr>
<td>Support Staff</td>
<td>141</td>
<td>152</td>
</tr>
<tr>
<td>Student employees</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>Total FTE all staff</td>
<td>315</td>
<td>332</td>
</tr>
</tbody>
</table>

---

*Resources accessible through Library search interfaces (includes some free and open access content)

** Music Library relocated May 2013; Education Library count not available

*** New counting method adopted January 2013
## Appendix C

**UBC LIBRARY STATEMENT OF EXPENDITURES - VANCOUVER CAMPUS**

*Fiscal year April 1, 2013 – March 31, 2014, figures listed in thousands of dollars.*

<table>
<thead>
<tr>
<th>Year</th>
<th>Salaries</th>
<th>Benefits*</th>
<th>Collections</th>
<th>Other</th>
<th>Total Expenditures</th>
<th>Revenue</th>
<th>Surplus/Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009/10</td>
<td>16,432</td>
<td>N/A</td>
<td>14,138</td>
<td>4,290</td>
<td>34,861</td>
<td>33,029</td>
<td>(1,832)</td>
</tr>
<tr>
<td>2010/11</td>
<td>16,404</td>
<td>3,058</td>
<td>13,923</td>
<td>6,724</td>
<td>40,109</td>
<td>36,740</td>
<td>(3,369)</td>
</tr>
<tr>
<td>2011/12</td>
<td>16,782</td>
<td>3,134</td>
<td>14,156</td>
<td>4,716</td>
<td>38,788</td>
<td>36,905</td>
<td>(1,883)</td>
</tr>
<tr>
<td>2012/13</td>
<td>16,539</td>
<td>3,231</td>
<td>13,169</td>
<td>4,816</td>
<td>37,755</td>
<td>38,202**</td>
<td>446</td>
</tr>
<tr>
<td>2013/14</td>
<td>16,600</td>
<td>3,212</td>
<td>14,419</td>
<td>4,981</td>
<td>39,214</td>
<td>37,939</td>
<td>(1,274)</td>
</tr>
</tbody>
</table>

*Benefit funding and expenses were transferred to UBC Library in 2010/11. These benefit charges were paid by UBC Finance prior to 2010/11.*

**The revenue increase is due to one-time funding of $2.5 million for facilities projects and $1.2 million for copyright compliance, consisting of one-time and recurring funding. If this funding and associated expenses are excluded, the operating loss is about $1.5 million.*

### Scope of financial information

The funds included in this financial report are:
- General purpose operating funds
- Fee for service funds
- Specific purpose funds
- Endowment funds
- Sponsored research grants
Appendix D

FRIENDS OF THE LIBRARY AND THE IRVING K. BARBER LEARNING CENTRE

The following donors contributed gifts between April 1, 2013 and March 31, 2014.

FINANCIAL CONTRIBUTIONS

PRESIDENT’S CIRCLE
(LIFETIME CONTRIBUTION, $250,000 AND ABOVE)
None

CHANCELLOR’S CIRCLE
(LIFETIME CONTRIBUTION, $25,000 TO $249,999)
Wallace B. Chung
Anonymous

WESBROOK SOCIETY
(ANNUAL CONTRIBUTION, $1,000 TO $24,999)
Nine anonymous donors
Timothy Armstrong
Canadian Centre for Studies in Publishing
Sandra L. Cawley
Marilyn Y. Chung
Bruce P. Dancik
Robert E. Dorrance
Bruce Frankard
Michael J. Fraser
William and Jessica Hancock
Donald W. Laishley
Jean G. Lane
Joanne G. Louie Mah
Mariana L. Luittmann
Karen L. MacWilliam
Colin McIver
Kevin McLaafferty
Vera Pech
D Lynn Porter
Gordon H. Price
Roland Whittaker Charitable Trust
Michael J. Roman
Shahryar Shahangyan
Peter A. Simmons
John E. Stainer
Nancy Stuart-Stubbs
Vancouver Foundation
Wilson Zhang

FRIENDS
(ANNUAL CONTRIBUTION, $500 TO $999)
Three anonymous donors
Jenny Au-Yeung

Dr. Christaan Avenant Inc.
Charles B. Bailey
Elements Physical Therapy and Acupuncture Ltd.
Iain S. Begg
Sarah Benitz
Laurence L. Bongie
Gerald C. Chan
Portia Chan
Mike Chang
Dr. Lloyd and Mrs. Kay Chapman Charitable Foundation
Yin Fair Chee
Teresa Chung
Ronald M. Cloves
Ashis Das
Caroline Downey
Bruce Echeverria
Maria L. Eden
Qing Fan
Dean E. Feltham
Simon Feng
Sun Life Financial
Richard D. French
Tony Geheran
Duane Gingerich
James H. Goulden
Teruo Harada
Thomas A. Hobley
Huang W. Hung
Kristos J. Latridis
Kevin Le
Raj Johal
John S. Keenlyside
Kershaw
Monica Khoe
Magda Khouzam
Teri-Jo Kiloran
Robert V. Kubicek
Francis Lau
Stan Liu
Nadejda Medvedev
Kumiko Miyako
James M. Orr
James A. Rainer
Robert S. Rothwell
David T. Shuen
Neville Spillman
Marie Sweeny

cont’d on next page

UBC Library strives to ensure the accuracy of this list – if there are updates, please contact the Library Development Office at 604-827-4112.
Appendix D

FRIENDS OF THE LIBRARY AND THE IRVING K. BARBER LEARNING CENTRE

The following donors contributed gifts between April 1, 2013 and March 31, 2014.

FINANCIAL CONTRIBUTIONS

FRIENDS
(ANNUAL CONTRIBUTION, $500 TO $999)
cont’d
David Tims
Elisabeth Tiso
Balaji Venkataraman
Sau May Windsor Lau
Shen Xu
Xin Zhai Yu
Wei Zhang

GIFTS-IN-KIND

$250,000 AND ABOVE
Uno and Dianne Langmann
- Collection of BC Photographs, over 18,500 items from 1850’s to 1970’s
Uno Langmann Limited
- Collection of BC Photographs- over 18,500 items from 1850’s to 1970’s

$25,000 TO $249,999
Peter Chew
- Collection of classical and contemporary Chinese books and family records of Mr. Wei Tingsheng
Douglas Coupland
- Additional materials to Douglas Coupland Fonds consisting of textual, drawings, drafts and art objects
John Keenlyside
- Materials related to BC Laws and regulations including bills, acts and proclamations created during 1858-1871
George F. MacDonald
- Materials related to Native Arts and Culture
- Northwest Art Card Collection -including art cards by various First Nations Artists (1968-1994)
- Engravings and maps
Leonard Roberts
- Archival and published material related to the artist Arthur Hughes

$1,000 TO $24,999
Alison Bailey
- Monographs and journals for Chinese literature studies
William H. Bamford
- Materials including diaries, books and ephemera
David E. Bond
- Poster Auctions International Inc. issues
Benjamin F. Clifford
- Books by Roderick L Haig-Brown
Don Cochrane
- Original copies of the Harmac Newsletter from 1938-1945 belonging to Laura Cochrane’s files
Norman C. Collingwood
- Materials relating to BC history and monograph and monographic sets
John S. Conway
- Additional materials to existing John Conway Fonds
Stanley Deane
- 51 books including warfare and history
- 60 books, relating to popular history, art and travel
Robert Duncan
- Textual records and photographs related to the documentary film “Volcano”
Greg E. Franklin
- Materials related to the Duchess of Atholl taken by Benjamin Franklin
Michael Friedlaender
- German Language Monographs
Jorge Garcia
- Monographs on various aspects of Latin America, mostly in Spanish
Helen L. Hager
- Materials belonging to Mary Bollert and Totem yearbook issues
Janet Hall
- Archival material and ephemera related to Jack Scott, circa 1930’s-2000
Blanche Howard
- Additional materials to Blanche Howard fonds including correspondence with Carol Shields and family
George Knox
- Three antiquarian books
Joy Kogawa
- Archival material on the National Association of Japanese Canadians
- Materials on Japanese redress and events related to the Joy Kogawa fonds

cont’d on next page
Appendix D

FRIENDS OF THE LIBRARY AND THE IRVING K. BARBER LEARNING CENTRE

The following donors contributed gifts between April 1, 2013 and March 31, 2014.

GIFTS-IN-KIND

$1,000 TO $24,999

cont’d

Rudolf Kovanic
- Two video tapes and an interview with Ian McTaggart-Cowan by Bristol Foste

Dan N. Kuhn
- Antiquarian maps and engraved views

Walter F. Lanz
- Additional materials to the Dorse McTaggart Fond and two prints by George Hunter

Stan Manson
- Folio leaves from psalters and books on calligraphy and writing

George McWhirter
- Personal papers created/collected by George McWhirter

Dorothy Morse
- Archival material related to Robert Allison Hood ca. 1910’s-1950’s

William H. New
- Four boxes of papers created/collected by William H. New

Trudy Pekarsky
- Architectural Digest issues

Gordon Price
- Digital images of urban design
F. Leslie Reed
- Records related to Leslie Reed

Anonymous
- Materials related to Canfor Forest Products in the 1980’s and photographs in 1950’s

Anonymous
- Flyfishing books

Karen Smithson
- Materials created by Elliot Weisgarber including musica sketches and recordings

Yvonne Smitz
- Correspondence sent by Claire Culhane 1979-1996

Martin R. Taylor
- Three boxes of materials related to the Paisley Snail Case

Madhu Varshney
- Hindi poetry by Madhu Varshney

Jean Wilson
- Letters written to Jean Wilson by Jane Rule or Helen Sonthoff from 1976-1983

Cen-gion Yen
- Chinese books

Thomas C. Brown, Sheila J. Munro and Lynda Tanaka
- Archival material related to Frank H. Brown, circa 1930-1982

Jill Cooper-Robinson, Jean Robinson Hughes, and Christopher Robinson
- Collection of photographic negatives on Japan

$500 TO $999

Corinne L. Durston
- Historical Canadian children’s books

Stanley Greenspoon
- Mathematics books

Christine M. Hellwig
- Monographs on Southeast Asia

John M. Klassen
- Monographs, mostly in Czech

Kristin Krimmel
- Materials including maps, atlas and conference proceedings

Costa Papadopoulos
- Dental journals

Mary Ridington
- Materials for the John Ridington Collection

Anonymous
- Mechanical engineering textbooks

GRANT FUNDING

Grants play a vital role in funding UBC Library’s services and projects. Highlights from 2013/14 include:

Council on Library and Information Resources
Cataloging Hidden Special Collections and Archives grant. $88,332.00 to support the Discovering Modern China project.

Korea Foundation
$20,836.00 for the expansion of Korean collections in the Asian Library.
Appendix E

UBC LIBRARY AWARD PROGRAMS - 2013/14 RECIPIENTS

The Library administers a number of award programs and provides funding for various community engagement projects on an annual basis. Each program has eligibility criteria, an adjudication or nomination process and recipients are formally recognized and announced through the Library's communication channels and, in some instances, more formally at specific events.

GSS CIRCLE OPEN SCHOLAR AWARD
The GSS cIRcle Open Scholar Award is a collaboration between the Graduate Student Society and cIRcle - the University's digital repository that was set up by UBC Library in 2007. The award highlights UBC as a leader in the open dissemination of graduate student work, and creates an incentive for graduate students to populate cIRcle with material beyond theses and dissertations.

Authors of each winning submission receive a cash prize of $500.

• Sam Bailey and Shona Robinson were recognized for their entry Aesthetic Assessment of Drinking Water at UBC: A Comparison of Waterfillz and Tap Water; both belong to the Pollution Control and Waste Management Group at UBC's Department of Civil Engineering.

• Christian Brady - a Master's student in the Department of Classical, Near Eastern and Religious Studies - was selected for his entry, entitled Podcasting Lucan and the Classical World.

• Robert J. DeAbreau, a graduate student in UBC's Mathematics Education Program, was recognized for Poor Roots and Weak Stem: Potential issues in STEM Leadership Programs, a paper written for an education leadership course.

• Donnard MacKenzie, a PhD student in UBC’s Drama and Narrative Studies, won for Thomas at Mile Zero, a coming of age story set as a West Coast drama/comedy circa 1982.

INNOVATIVE DISSEMINATION OF RESEARCH AWARD
Established by the UBC Library in 2010, the Innovative Dissemination of Research Award focuses on new and innovative ways of communicating and disseminating knowledge. The Award honors UBC faculty, staff and students who are expanding the boundaries of research through the creative use of new tools and technologies that enhance the research findings being disseminated. The award consists of a $2,000 cash prize.

David Ng, a UBC geneticist, was recognized for Phylo, a trading card game with a biodiversity twist and crowd-sourced content. The game attempts to engage players in environmental education through gamification and an open philosophy that makes all Phylo elements - ranging from printable cards to computer coding – freely available to anyone. Contributors have included scientists, artists, programmers, educators, intellectual property lawyers and gamers.

BASIL STUART-STUBBS PRIZE FOR OUTSTANDING SCHOLARLY BOOK ON BRITISH COLUMBIA
The Basil Stuart-Stubbs Prize for Outstanding Scholarly Book on British Columbia is an annual prize sponsored by UBC Library and the Pacific BookWorld News Society, and recognizes the best scholarly book published on a B.C. subject by a Canadian author. The author receives a $1,000 prize. The award was established in memory of Basil Stuart-Stubbs, a bibliophile, scholar and librarian who passed away in 2012.

In 2014, North Vancouver author David Stouck won for Arthur Erickson: An Architect’s Life, a biography on the renowned local architect. His extensive study details the manifold contrasts and contradictions of Erickson – a one-time UBC architecture professor who became internationally renowned and designed some of Vancouver’s signature buildings (including UBC’s Museum of Anthropology. The two other short-listed titles were Charles Edenshaw by Robin Kathleen Wright, Daina Augaitis, Robert Davidson and James Hart (Black Dog Publishing) and Inventing Stanley Park: An Environmental History by Sean Kheraj (UBC Press).

UBC LIBRARY STAFF RECOGNITION AWARDS
UBC Library’s Staff Recognition Awards acknowledge the many ways in which staff contribute to UBC Library through creativity, innovation, excellence, and customer service. Nominations are from within the Library and each recipient receives a cash $750 award and glass-etched award, presented at the annual Library Staff Appreciation Luncheon during the summer. The Award program began in 2012. 2013 Award Recipients:

• Unsung Hero Award – Mahmoud Moulay, Facilities Assistant

• Innovation Award – Paul Joseph, Systems Librarian

• Employee Excellence Award – Rod McFarland, Programmer Analyst

More details about each award category and recipient profiles for the current and previous years are available online.
Appendix E

UBC LIBRARY AWARD PROGRAMS - 2013/14 RECIPIENTS

The Library administers a number of award programs and provides funding for various community engagement projects on an annual basis. Each program has eligibility criteria, an adjudication or nomination process and recipients are formally recognized and announced through the Library’s communication channels and, in some instances, more formally at specific events.

ABORIGINAL AUDIO DIGITIZATION AND PRESERVATION PROGRAM

The Aboriginal Audio Digitization and Preservation Program (AADPP) provides matching funds for B.C. Aboriginal organizations to digitize audio cassette tapes for preservation and access. The AADPP is a pilot initiative led by UBC Library’s Irving K. Barber Learning Centre in partnership with the Museum of Anthropology.

2014 Recipients

- Lake Babine Nation
- Splatsin Ts'msyel'txw Teaching Centre Society
- Tsleil-Waututh Nation
- Union of British Columbia Indian Chiefs
- Tahltan Central Council

Additional details about how much each recipient received and their project overview is available online.

BC HISTORY DIGITIZATION PROGRAM

The BC History Digitization Program promotes increased access to British Columbia’s historical resources by providing matching funds to undertake digitization projects that will result in free online access to unique provincial historical material.

In 2014, successful projects included the Nikkei National Museum’s Japanese Canadian Stories project; Barkerville Heritage Trust’s effort to digitize Chinese language Collections; the Museum of Vancouver’s Fashion Accessories Digitization; and the BC Dairy Historical Society’s Butter-Fat magazine Digitization Project.

Recipients for 2014:

- Barkerville Heritage Trust
- BC Dairy Historical Society
- Beaty Biodiversity Museum – Spencer Entomological Collection
- BC Government Publications Digitization Group
- Esquimalt Municipal Archives
- Jewish Museum and Archives
- Museum of Vancouver
- Nikkei National Museum
- Northern BC Archives
- Prince George Public Library
- Reach Gallery and Museum
- Simon Fraser University Library
- Squamish Public Library
- Thompson-Nicola Regional District Libraries
- Touchstones Nelson
- Trinity Western University Archives
- United Church – Bob Stewart Archives
- University of Victoria Libraries
- City of Vancouver Archives
- Vancouver Public Library

Additional details about how much each recipient received and an overview of the projects funded is available online.
Appendix E

UBC LIBRARY AWARD PROGRAMS - 2013/14 RECIPIENTS

The Library administers a number of award programs and provides funding for various community engagement projects on an annual basis. Each program has eligibility criteria, an adjudication or nomination process and recipients are formally recognized and announced through the Library’s communication channels and, in some instances, more formally at specific events.

REMOTE COMMUNITY BASED LEARNING FUND

The Irving K. Barber Learning Centre and the Centre for Community Engaged Learning provides funding to faculty members creating remote community based experiential learning (CBEL) opportunities for UBC students. The funding supports collaborations between UBC students and organizations located in BC communities outside of the Lower Mainland. Applications are accepted on a rolling basis until the full amount of $30,000 is awarded.

Recipients for 2013/14:
Six applications were received for the 2013/14 academic year. Half of the applications were for Term 1 and the other half for Term 2. Additional details about how much each recipient received and project overview is available online.

Term 1:
Course – COMM 468 (Marketing Applications)
Community Partner: Whistler Grocery Store
Amount: $3,000

Course – PLAN 548F (Sustainability, Planning and Governance Approaches to Whole Region Change)
Community Partner: Shawnigan Basin Authority
Amount: $5,000

Course – Student Directed Research for graduating thesis
Community Partners: Canadian Wildlife Service, Parks Canada, BC Wildfire Management, Ecological Restoration, private sector consultants in Okanagan and East Kootenays
Amount: $4,970

Term 2:
Course – COMM 468 (Marketing Applications)
Community Partner: Tofino Surf Shop
Amount: $3,000

Course – SOWK 415 (Field Education)
Community Partner: Ministry of Family and Child Development, Gibsons and Pemberton
Amount: $4,950

Course – FRST 424 (Sustainable Forest Management)
Community Partner: MacLeod Lake Indian Band, District of Mackenzie, Nuxalk Development Corporation
Amount: $5,000

Course – LFS 350 (Land, Food and Community II)
Community Partner: Gambier Island Sea Ranch, Galiano Island Club Community Food Program
Amount: $4,080
Appendix F

UBC LIBRARY SNAPSHOT INFOGRAPHIC

Prepared using data from the 2013/14 academic year.

UBC Library advances research, learning and teaching excellence by connecting communities within and beyond UBC to the world’s knowledge. The Library, a high-ranking member of the Association of Research Libraries (ARL), is the largest library in British Columbia and provides access to expanding digital resources and houses an on-site digitization centre. For more information, visit www.library.ubc.ca.

15 branches across 2 campuses
$34M annual GPO
259 full-time staff
• 86 librarians
• 173 management & support staff
• 41 student employees

Rankings
• 14 out of 115 university libraries in the Association of Research Libraries (ARL)
• 2nd among Canadian academic libraries (ARL)
• cIRcle, UBC’s information repository, ranks 2nd in Canada and 44th globally among 1,650 repositories.

Collections
More than 7M volumes
More than 1.4M e-books
220,000+ e-journals
500,000+ items
locally produced digital collections
More than 5 million e-book downloads
8 million e-journal downloads

Library Resources
How we spend $ on
Shifting from print to electronic
79% print
21% electronic
72% electronic
28% print

2002/2003
2011/2012

On-campus
3.6M+ visits (JAN-DEC 2013)

library.ubc.ca
1.3M+ visits

Copyright assistance
• Provided 27 copyright workshops to campus groups
• Assisted 600 courses
• Reviewed more than 2,000 items (course readings, images, and media) on request

Librarians provided 1,466 instructionals to more than 35,500 participants and answered
• 54,648 in-person
• 11,740 online reference questions
Appendix G

The UBC Okanagan Campus Library’s #morelibrary campaign encouraged responses to the question, “What more do you want from your library?” The responses are shown in the infographic below.

**YOU ANSWERED**

- We received over 400 responses, which fell into 6 categories

**WE LISTENED**

Based on the #morelibrary feedback, we’ve made numerous improvements to the library:

- Significantly reduced login times on library computers
- New wall-mounted whiteboards for study rooms
- An additional study room and new tables for group work available on main floor
- 128 seats added, including new study carrels and group tables
- More working electrical outlets for the new tables and study carrels
- 15+ new laptops for the laptop lending program
Acknowledgement

I would like to thank the many contributors to this report and those who aided in its development and production.

Ingrid Parent
University Librarian

Editor
Linda Ong

Assessment Librarian
Jeremy Buhler

Design
Jessica Woolman

Published By
University of British Columbia Library
Irving K. Barber Learning Centre
1961 East Mall
Vancouver, British Columbia
Canada
V6T 1Z1

January 2015

Photo Credits

COVER
From left to right:
ROW 1: Martin Dee
ROW 2: UBC Library
ROW 3: Martin Dee
Bottom: UBC Library

INSIDE
PG 2: Martin Dee
PG 3: “Colonial Hotel, Soda Creek,” 1867
PG 5: “Photograph depicting couples quarrelling,” ca. 1910
PG 8: Nikkō oyama ezu, 1850
PG 9: University Endowment Lands map, 1926
PG 10: 56th report of the Okanagan Historical Society, 1992
PGs 4, 6, 7, 11, 12, 13: UBC Library

BACK
UBC Library