UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

SENATE MEETING
OPEN SESSION
AGENDA

August 26, 2020
3:30 – 5:30 PM
Zoom Only

1.0 Acknowledgement of Territory

2.0 S-202008.01
Approval of the Agenda ✞
Page 1 That the agenda for the August 26, 2020 Open Session of Senate be approved as presented.

✞ **NOTE:** *The Senate Agenda for the public session consists of two parts, a consent agenda and a regular agenda. The consent agenda contains items that are deemed to be routine or noncontroversial and are approved by the Steering Committee of Senate for placement on that agenda. Any Senator wishing to discuss any item on the consent agenda may ask the Chair of Senate that the item be removed from the consent agenda and placed on the regular agenda. Items removed from the consent agenda will be placed on the regular agenda and dealt with in the order in which they appear on the full agenda. Senators wishing to ask a question regarding an item on the consent agenda, without necessarily removing that item from the consent agenda, are strongly encouraged to direct questions to the Secretary of Senate in advance of the meeting.*

3.0 Presentation – Update on UNBC's Response to Coronavirus (COVID-19) **Payne**

4.0 Approval of the Minutes

S-202008.02
Approval of the Minutes
Page 5 That the Minutes for the June 24, 2020 Public Session of Senate be approved as presented.

5.0 Business Arising

6.0 President's Report *(10 minutes)* **Payne**

7.0 Report of the Provost *(5 minutes)* **Dale**

7.1 Academic Re-Structuring

8.0 Report of the Registrar *(5 minutes)* **Annear**

9.0 Question Period *(10 minutes)*

9.1 Written questions submitted in advance

9.2 Questions from the floor

10.0 Approval of Motions on the Consent Agenda **Payne**

No motions on the Consent Agenda

11.0 Committee Reports

11.1 Senate Committee on Academic Appeals — Klassen-Ross

11.2 Senate Committee on Academic Affairs — Dale

For Approval Items:

Page 43 **"Schools" within the University Policy – S-200303.07 is provided in the meeting package**

S-202008.03
Change from Programs to School - Engineering Programs *(for the Senate Regular Agenda)*
That a School of Engineering be established consisting of the Civil Engineering, Environmental Engineering, Joint Environmental Engineering, and MENG – WID degree programs.
Page 45 **Effective Date:** September 1, 2020

S-202008.04
Common First-Year Engineering Curriculum Agreement *(for the Senate Regular Agenda)*
That the Common First-Year Engineering Curriculum Agreement (CFYEC) agreement be approved as proposed.
Page 47 **Effective Date:** September 2020

S-202008.05
Transfer Agreement – Vancouver Island University – UNBC Engineering *(for the Senate Regular Agenda)*
That the Vancouver Island University - University of Northern British Columbia Engineering Transfer Agreement based on the Common First-Year Engineering Curriculum Agreement (CFYEC) agreement be approved as proposed.
Page 79 **Effective Date:** September 2020

11.3 Steering Committee of Senate — Payne

S-202008.06
Change(s) to the Senate Handbook – Dissolving SCAA and SCSDA
That, on the recommendation of the Steering Committee of Senate, the Senate Committee Academic Appeals and the Senate Committee on Student Discipline Appeals be dissolved and subsequently be removed from the Senate Handbook.
Page 83 **Effective Date:** **Upon the approval of Senate**

11.4 Senate Committee on Nominations

For Approval Items:

Regular **S-202008.07**
Recommendation of Senate Committee Members to Senate
That, on the recommendation of the Senate Committee on Nominations, and barring further nominations from the floor of Senate, the following candidates, who have met all eligibility requirements to serve on Senate committees as indicated, be appointed as proposed.
Effective date: Upon Approval of Senate

SENATE COMMITTEE CURRICULUM AND CALENDAR

Faculty Member (03/31/2023)	Lisa Dickson
Faculty Member (03/31/2023)	Steve Helle

SCAAF ART ACQUISITION SUBCOMMITTEE

Faculty Member (03/31/2023) *(knowledgeable in archaeology, visual arts, archives or heritage conservation)*	Sarah de Leeuw
Faculty Member (03/31/2023) *(with broad interest in the arts)*	Kim Stathers

Regular **S-202008.08**

Recommendation of Senate Committee Members to Senate
That, on the recommendation of the Senate Committee on Nominations, and barring further nominations from the floor of Senate, the following candidates, who have met all eligibility requirements to serve on Senate committees as indicated, be appointed as proposed.
Effective date: September 1, 2020

SENATE COMMITTEE NOMINATIONS

Student Senator (08/31/2021)	Christiana Onabola

SENATE COMMITTEE ON ADMISSIONS AND DEGREES

Undergraduate Student (08/31/2021)	Andrew Mitchell

SENATE COMMITTEE ACADEMIC AFFAIRS

Graduate Student (08/31/2021)	Lydia Troc
Undergraduate Student (08/31/2021)	Alexander Schinkel
Undergraduate Student	Drew Gilchrist

SCAAF SUBCOMMITTEE ON ACADEMIC SCHEDULING

Undergraduate Student (08/31/2021)	Andrew Mitchell

SENATE COMMITTEE ON HONORARY DEGREES AND OTHER FORMS OF SPECIAL RECOGNITION

Student Senator (08/31/2021)	Lydia Troc

SENATE COMMITTEE ON SCHOLARSHIPS AND BURSARIES

Undergraduate Student (08/31/2021)	Mattias Wels-Lopez
Student Senator (08/31/2021)	Sloane Zogas

SENATE COMMITTEE ON UNIVERSITY BUDGET

Student Senator (08/31/2021)	Brandon Greenall

SENATE COMMITTEE ON STUDENT APPEALS

Faculty Senator (03/31/2021)	Tammy Klassen-Ross
Faculty Senator (03/31/2023)	Julius Bankole
Faculty Member (03/31/2021)	Catharine Schiller
Faculty Member (03/31/2022)	Ngoc Huynh
Graduate Student Senator (08/31/2021)	Christiana Onabola
Undergraduate Student Senator (08/31/2021)	Laura Parent
Student at Large (08/31/2021)	Helga Holler-Busch

For Information:

Vacancies

COMMITTEE	POSITION	TERM EXPIRY DATE
SCN	Faculty Senator	03/31/2023
	Lay Senator	03/31/2021
~~SCAA~~	~~Lay Senator~~	~~03/31/2021~~
SCAD	Faculty Member	03/31/2023
SCCC	Faculty Member†	03/31/2023
	Faculty Member/Senator	03/31/2023
	Faculty Member/Senator	03/31/2023
	Additional Member, who may be faculty or the academic administrative staff†	03/31/2023
SCAAF	Faculty Member - Regional	03/31/2023
	Graduate Student	08/31/2020
SAAS	Faculty Member†	03/31/2023

	Faculty Member ✝	03/31/2023
SSAS	Professional Program Faculty Rep (appointed by Provost)	03/31/2023
SCFNAP	Aboriginal Regional Senator or Aboriginal Lay Senator	03/31/2021
SCSB	Faculty Senator — CASHS	03/31/2023
SCUB	Faculty Senator	03/31/2021
	Faculty Member – Professional Programs	03/31/2022
~~SCSDA~~	~~First Nations Student~~	~~03/31/2020~~
	~~Administrative Staff Member~~	~~03/31/2022~~
SSAC	Tenured professors from the Faculty of Business and Economics	03/31/2023
	Tenured professors from the Faculty of Indigenous Studies, Social Sciences and Humanities	03/31/2023
	Tenured professors from the Faculty of Environment	03/31/2023

Note: The symbol "✝" denotes that an appointment by Senate is pending.

11.5 Senate Committee on Curriculum and Calendar **Annear**

11.6 Senate Committee on Admissions and Degrees **Annear**

11.7 Senate Committee on First Nations and Aboriginal Peoples **Dale**

11.8 Senate Committee on Honorary Degrees and Special Forms of Recognition **Payne**

11.9 Senate Committee on Scholarships and Bursaries **Annear**

11.10 Senate Committee on University Budget

12.0 Information

13.0 Other Business

13.1 Nomination and Election of a Vice-Chair of Senate **Payne**

14.0 **S-202008.09** *(10 minutes)*
Move to the Closed Session
That the meeting move to Close Session.

15.0 **S-202008.**
Adjournment
That the Senate meeting be adjourned.

SUBJECT: "SCHOOLS" WITHIN THE UNIVERSITY

1. Purpose

Academic units, with the assent of their College Council and the Senate Committee on Academic Policy and Planning, may be advanced to Senate for designation as "Schools" within the University, providing they meet all the necessary criteria, as outlined in the Scope of this policy.

2. Scope

- The academic unit must offer a program, or a group of closely-related programs, most or all of which lead (or can lead), directly or by examination, to professional certification for program graduates.
- By comparison with other academic units, the academic unit seeking the designation "School" must offer a program emphasizing skills training.
- The academic unit must not be subdivided into smaller academic units.
- A persuasive case must made that the designation offers a distinct benefit in the context of student recruitment, professional certification after graduation, and/or the pursuit of research funding by faculty.
- Any changes in this area must be consistent with the University's commitment to interdisciplinary in its academic programming.

3. The Characteristics of Schools:

The protocols under which institutions choose to designate certain academic units as "schools" vary widely, and indeed universities are free to use whatever terminology they wish in naming their programs. A cursory review of Canadian practices reveals a degree of commonality, however. Generally speaking "schools" (as opposed to "departments" or "programs"):

- may be led by persons of varying designations in academic rank – Chairs, Directors or Deans.
- lead or may lead to a professional or quasi-professional standing for graduates. For example, "Schools" of Nursing are common and usually lead to professional certification for graduates. "Schools of Business" are common and may lead to CPA certification.
- emphasize skills training in the context of a University educational environment.
- are small by way of comparison to faculties or colleges, and equate in size roughly to Departments.
- are not subdivided into smaller academic units. For example, the four Veterinary Colleges in Canada lead to professional qualification but, because they contain Departments as academic units, are referred to as Faculties. Nor do Engineering/Applied Science programs generally carry the designation "School."
- may or may not be externally accredited. External accreditation may be a factor in designating a program area as a "School," as in the case of Nursing, for example. By contrast, however, most Chemistry programs in Canada are externally accredited; but traditionally the Academic Unit is referred-to as a Department. A degree in Chemistry generally does not lead to professional certification.

4. Authority:

Senate would be charged with making a final decision on the advice of the relevant College Council, through the Committee on Academic Policy and Planning.

UNIVERSITY OF NORTHERN BRITISH COLUMBIA

Motion Number (assigned by Steering Committee of Senate): S-202008.03

SENATE COMMITTEE ON ACADEMIC AFFAIRS

PROPOSED MOTION

Motion: That a School of Engineering be established consisting of the Civil Engineering, Environmental Engineering, Joint Environmental Engineering, and MENG – WID degree programs.

Effective Date: September 1st, 2020

Rationale: Presently, the Engineering degree programs are housed in separate administrative units or not assigned to an administrative unit at all. The Joint Environmental Engineering degree is administered by Chemistry, Environmental Science, and Environmental Engineering, the MENG degree is administered by WIDC, and the Civil Engineering and Environmental Engineering programs are technically without an administrative home. It was envisioned with the creation of the new Faculty of Science and Engineering that the Engineering programs at UNBC would be consolidated into a single unit and this unit would be a "School of Engineering". A single unit will facilitate the development of the degree programs and address issues with respect to accreditation.

This motion is being brought forward at this time and ahead of the reorganizational structure of the institution as we will need to address issues surrounding Canadian Engineering Accreditation Board requirements in the coming September term. The Administrative structure of the school will be determined in consultation with the Dean and the new Faculty of Science and Engineering.

Motion proposed by: Todd Whitcombe, Chair, CHESEE, and Ernie Barber, Associate Dean, Engineering

Academic Program: Engineering

Implications for Other Programs / Faculties? None

College: College of Science and Management

College Council / Committee Motion Number: CSAMCC 2020: 08:13:04

College Council / Committee Approval Date: Aug 13, 2020

Attachment Pages (if applicable): 2 pages

INFORMATION TO BE COMPLETED AFTER SENATE COMMITTEE ON ACADEMIC AFFAIRS MEETING

Brief Summary of Committee Debate:

Motion No.: SCAAF202008.05

Moved by: **Seconded by:**

Committee Decision: CARRIED

Approved by SCAAF: August 20, 2020 _____
Date **Chair's Signature**

For recommendation to ✓ **, or information of** _____ **Senate.**

UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

Motion Number (assigned by Steering Committee of Senate): S-202008.04

SENATE COMMITTEE ON ACADEMIC AFFAIRS

PROPOSED MOTION

Motion: That the Common First-Year Engineering Curriculum Agreement (CFYEC) agreement be approved as proposed.

Effective Date: September 2020

Rationale: See attachment

Motion proposed by: Engineering

Academic Program: Engineering

Implications for Other Programs / Faculties? None

College: CSAM

College Council / Committee Motion Number: not applicable

College Council / Committee Approval Date: not applicable

Attachment Pages (if applicable): **33** pages

INFORMATION TO BE COMPLETED AFTER SENATE COMMITTEE ON ACADEMIC AFFAIRS MEETING

Brief Summary of Committee Debate:

Motion No.: SCAAF

Moved by: **Seconded by:**

Committee Decision:

Approved by SCAAF: _____ _____

Date **Chair's Signature**

For recommendation to ✓**, or information of** _____ **Senate.**

Common First-Year Engineering Curriculum Agreement

1.0 Objectives:

The Common First-Year Engineering Curriculum (CFYEC) is intended to prepare graduates for transfer into second-year Engineering at any of the post-secondary institutions shown as signatories to this document. This program (with its appropriate appendix) contains the common first-year expectations for each of the receiving institutions, and, for clarity, are shown in this document as course blocks in the areas of physics, chemistry, engineering design, computer programming, mathematics, and communication skills.

The key objectives include:

- **Improving** efficiencies at sending institutions.
- **Assisting** smaller institutions in developing an engineering focus, creating opportunities for **community engagement** and **partnerships**.
- **Improving** the student learning environment (e.g. stronger cohort development, student supports.)
- **Enhancing** quality reporting for accreditation processes.

2.0 Agreement Terms and Conditions

The terms and conditions of this agreement have been informed by:

- Pre-existing course-by-course articulation agreements (via the BC Council on Admissions and Transfer - BCCAT).

And applies to:

- Students who have completed fully and successfully the common first-year engineering curriculum at one of the signatory institutions.

As a good faith agreement between all its signatories.

2.1 Good Faith Agreement

A Good Faith Agreement is an agreement that outlines a sincere effort and purpose of undertaking an action or activity with an aim or objective to achieve good results or outcomes. With respect to the Common First-Year Engineering Agreement, good faith can be described as just and honest conduct, which should be expected of all parties in their dealings, one with another and with third parties. Good faith requires that each party perform their respective obligations and enforce their rights and responsibilities honestly and fairly.

2.2 Obligations:

Through their signatures on this agreement, each primarily receiving institution agrees to:

- Accept, as equivalent to its first-year engineering curriculum, the curriculum stated in Section 3.0 of this document, including the appropriate Appendix.

- Post information on its website regarding CFYEC and its signatory sending institutions, and promote the CFYEC option when meeting with high schools.

- Endeavour to provide access to information regarding the CFYEC and its signatory sending institutions to any applicant denied direct entry into an engineering program or school. Such data to be provided in compliance with the BC Freedom of Information and Privacy Act (FOIPA) and other relevant statues.

- On an annual basis, endeavour to provide details (in comparison to direct-entry students) on progression and academic success for students from a sending institution to that sending institution. Such data to be provided in compliance with FOIPA and other relevant statutes.

- Facilitate course-by-course articulation of the CFYEC through BCCAT for each signatory primarily sending institution upon request by said primarily sending institution.

Through their signatures on this agreement, each primarily sending institution agrees to:

- Encapsulate the CFYEC as a recognized credential (e.g. a certificate)
- Provide information on its website regarding the CFYEC and its signatory receiving institutions, and promote the CFYEC option when meeting with high schools.

- Ensure that instructors for designated engineering content within the CFYEC (typically those covering engineering science, engineering design, project work, and/or an introduction to the engineering profession) have a professional engineering credential (e.g. P. Eng, Eng. L) allowing for practice of engineering in Canada.

- Articulate course-by-course transfer of the CFYEC through BCCAT.

- Reasonably accommodate a request by receiving institutions to participate in at least one university transfer information session to provide details about their engineering programs.

- Reasonably accommodate requests by receiving institutions to document AU counts and topics in CEAB workbooks or equivalent, and collect a limited amount of graduate attribute data

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- Ensure students within the CFYEC program are aware that they must follow all application procedures and policies of the receiving institution, including applying for admission and submitting post-secondary and/or high school academic transcripts.

2.3 Agreement Review:

This agreement will be reviewed **annually** at the BCCAT Engineering Articulation committee meeting after it has been formally adopted.

2.4 Agreement Withdrawal:

Signatory institutions may give notice that they wish to withdraw from the agreement at any time; this notice must be served to the BCCAT Engineering Articulation Committee chair, who is responsible for communicating the intent to agreement signatories. The withdrawal will be effective no less than two years from the date the notice is served.

2.5 Change Requests

Change requests must be presented at the annual BCCAT Engineering Articulation Committee and approved by **all** the signatory primarily receiving institutions and a **2/3** majority of signatory primarily sending institutions. Such change requests ought not be unreasonably refused, and will typically be effective no less than **18 months** from the date of that meeting.

3.0 Curriculum:

This certificate will consist of eleven core courses plus one course specific to the signatory receiving institution, and will be treated as equivalent to the first-year engineering curriculum at that receiving institution. Students are expected to obtain the required skills and knowledge to transfer to second year and be successful.

General Requirements of Certificate:

- P.Eng, Eng.L., or equivalent designations in other Canadian professional engineering associations for designated engineering classes

Specific learning outcomes include the ability to:

- Demonstrate an understanding of the scientific method and apply it to critically solve problems;
- Demonstrate proper laboratory techniques, including the use of appropriate equipment and instrumentation;
- Develop original designs to solve engineering problems;
- Collect, analyze, and interpret laboratory data, and draw sound conclusions;
- Effectively communicate ideas and project results;
- Demonstrate an ability to work well independently and in groups;
- Engage in informed debate on topics related to technology; and
- Effectively apply scientific/engineering concepts towards subsequent coursework.

To add clarity, the learning outcomes from the certificate have been packaged in course units. Sending institutions need not organize these learning outcomes exactly as specified, although to

aid course-by-course articulation between sending and receiving institutions, it is recommended that these course packages be maintained as much as possible.

Course packages are presented in terms of hours of instruction (lecture:lab) per week over a standard term length of 12 weeks. This term length describes the effective instructional time, and excludes statutory holidays and any relevant final exam period. Terms that differ from this standard ought to be pro-rated to ensure that same minimum coverage (both in terms of learning outcomes and time) is maintained. Learning outcomes are elaborated for each course package in Appendix A, while the approximate course-by-course transferability of these units to each institution is shown in their appropriate appendix.

Differential Calculus - CALC I (4:0)
Limits, continuity, intermediate value theorem; Differentiation; Taylor polynomials and special Taylor series; Curve sketching

Integral Calculus - CALC II (4:0)
Integration; Numerical Integration (including the Trapezoidal Rule); Improper integrals: evaluation and convergence estimates; Differential equations (first-order linear) with applications.

Engineering Chemistry - CHEM I* (4:3)
A survey of general first year chemistry. Topics include thermochemistry, atomic and molecular structure, chemical bonding, solution and phase equilibria, equilibrium, chemical thermodynamics, and electrochemistry.

For those institutions not offering CHEM I*, the following combinations would be acceptable:

- CHEM I and CHEM II (BSc standard first-year chemistry curriculum)
- CHEM I and a one-credit course such that the latter course includes the topics of thermochemistry, thermodynamics, and electrochemistry

Computer Science I - CSCI I (4:2)
A first-year course in computer science using the 'C' programming language. Topics include structured programming, top-down program design, procedures, and an introduction to dynamic data structures.

University Writing - ENGL I (3:0)
An introduction to critical thinking and reasoning, academic writing, and research skills, consistent with the conditions and expectations students encounter as readers and writers at university.

Technical Writing - ENGL II (3:0)
An introduction to business and technical communication skills with a focus on documents (such as letters and reports) and presentations. Topics may include planning, outlining, summarizing, presenting data, handling references, and editing. The course comprises several practical assignments, including a formal report and an oral presentation.

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Engineering Design I - ENGR I (2:2)
An introduction to the principles of engineering design, engineering drawing and sustainable practice. This knowledge will be applied to practical projects to be undertaken by teams of students. ENGR I is to be instructed by a P.Eng, Eng.L., or equivalent designations in other Canadian professional engineering associations.

Engineering Design II - ENGR II (2:2)
Principles and applications of engineering design, engineering drawing, and sustainable practice. This knowledge will be applied to practical projects to be undertaken by teams of students. ENGR II is to be instructed by a P.Eng, Eng.L., or equivalent designations in other Canadian professional engineering associations.

Matrix Algebra - LALG I (4:0)
An examination of vectors, matrices and their operations, linear systems, determinants, linear dependence and independence, eigenvalues, and eigenvectors, and applications.

Fundamental Physics I - PHYS I (4:3)
A calculus-based course. Topics such as kinematics and dynamics of particles, energy and momentum, rotational and periodic motion.

Fundamental Physics II - PHYS II (4:3)
A calculus-based course. Topics include waves, electricity and magnetism, geometrical and physical optics, quantization and nuclear processes.

4.0 Admissions and Transfer:

Although this agreement does not mandate a specific minimum admission standard for primarily sending institutions, it does provide the following guidance on evaluating incoming students:

- English 12 with a minimum grade of B
- Physics 12 with a minimum grade of C+; Outstanding candidates missing Physics 12 or equivalent are encouraged to apply and will be reviewed on a case-by-case basis.
- Chemistry 12 with a minimum grade of C+; Outstanding candidates missing Chemistry 12 or equivalent are encouraged to apply and will be reviewed on a case-by-case basis.
- Pre-Calculus 12 with a minimum grade of B
- Recommended: Calculus 12 (if available); Programming 12 (if available)

5.0 Minimum Articulation Unit/Graduate Attribute Delivery

The following Accreditation Units (AU) and Graduate Attributes (GA) are determined to be the **minimum** delivery outcomes from the CFYEC, based 12 weeks of instruction with 10-weeks of labs. The AU/GA total has been broken down into lecture/lab hours/week, as well as hour counts in the areas of Math (M), Natural Science (NS), Complementary Studies (CS), Engineering Science (ES), and Engineering Design (ED). Definitions for each of these areas can be found in Appendix G.

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Table 1. Prescribed AU Outcomes claimed by the Common First-Year Engineering Curriculum

Course	Cred.	Lec (hr/wk)	Lab/Tut (hr/wk)	Total AU	M	NS	M+NS	CS	ES	ED	ES+ED
CALC I	3	4	-	48	48		48	-	-	-	-
CALC II	3	4	-	48	48	-	48	-	-	-	-
CHEM I	4	4	3	63	-	63	63	-	-	-	-
CSCI I	4	4	2	58	-	-	-	-	58	-	58
ENGL I	3	3	-	36	-	-	-	36	-	-	-
ENGL II	3	3	-	36	-	-	-	36	-	-	-
ENGR I	3	2	2	34	-	-	-	8.5	8.5	17	25.5
ENGR II	3	2	2	34	-	-	-	8.5	8.5	17	25.5
LALG I	3	4	-	48	48	-	48	-	-	-	-
PHYS I	4	4	3	63	-	63	63	-	-	-	-
PHYS II	4	4	3	63	-	63	63	-	-	-	-
Totals				**531**	**144**	**189**	**333**	**89**	**75**	**34**	**109**

Although Graduate Attributes are not prescribed by the CEAB at a first-year level, the accreditation board is looking for progression of each attribute through a students' academic studies. The CFYEC claims the following Graduate Attributes, *each at an introductory level*:

Table 2. Prescribed GA Outcomes claimed by the Common First-Year Engineering Curriculum

1. A Knowledge Base of Engineering
2. Problem Analysis
3. Investigation
4. Design
5. Use of Engineering Tools
6. Individual and Team Work
7. Communication Skills
8. Professionalism
9. Impact of Engineering on Society and the Environment
10. Ethics and Equality
12. Life-long Learning

Each signatory receiving institution may require additional AU/GA credits, as identified in Appendices B - F.

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6.0 SIGNATORIES

The Common First-Year Engineering Certificate is signed on behalf of:

6.1 Primarily Receiving Institutions

By placing your signature, you commit your institution, as a major receiving school, to adhere to the terms of this agreement

_____

Carol Jaeger, Associate Dean – Undergraduate Engineering Programs
University of British Columbia - Point Grey Campus Date

Yang Cao, Associate Director for Undergraduate Studies
University of British Columbia – Okanagan Campus Date

Christine L. Bovis-Cnossen, Provost and Vice-President Academic and Research Date
Thompson Rivers University

Lillanne Jackson, Associate Dean – Undergraduate Studies
University of Victoria Date

University of Northern British Columbia Date

Additional institutions may use the space below for their signatures.

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6.2 Primarily Sending Institutions

By placing your signature, and within two years of the stated date, you commit your institution to offering intakes to a curriculum aligned to the CFYEC, and adhering to the terms of this agreement.

Pouyan Mahboubi, Dean – Faculty of Arts and Sciences — Date
Capilano University

Titi Kunkel, Dean of Instruction – UC, Sciences, and Health Programming — Date
Coast Mountain College

Alison Anderson, Dean – School of University Studies and Career Access — Date
College of New Caledonia

Robin Hicks, Vice President Academic and Applied Research — Date
College of the Rockies

Ben Cecil, Provost and Vice-President, Academic and Students — Date
Langara College

Loren Lovegreen, Vice President, Academic and Research — Date
Northern Lights College

Neil Cruickshank, Dean – Arts, Science and Technology — Date
North Island College

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Christine L. Bovis-Cnossen, Provost and Vice-President Academic and Research Date
Thompson Rivers University

Shirley Lew, Dean – School of Arts and Science Date
Vancouver Community College

Harry Janzen, Dean – Faculty of Science and Technology Date
Vancouver Island University

Additional institutions may use the space below for their signatures.

APPENDIX A: Required Learning Topics/Outcomes

CALC I/II

CALC I (Differentiation) and CALC II (Integration) have been standardized for the science stream across all BC post-secondary institutions under a BCCAT TI project entitled *First-year Core Calculus*[1] (updated in 2013[2]) and the BC Transfer Guide shows the equivalent of CALC I and II are articulated across all receiving institutions on a course-by-course basis.

Required Learning Topics - CALC I/II

The first-year Core Calculus - Science Stream prescribes the following core content, which shall be the equivalent of 75% of a standard one-year calculus experience:

- Limits, continuity, intermedia value theorem
- Differentiation
    - First and second derivatives with geometric and physical interpretation
    - Mean value theorem
    - Derivatives of exp and log functions, exponential growth and decay
    - Derivatives of trigonometric functions and their inverses
    - Differentiation rules (including chain rule, implicit differentiation)
    - Linear approximation and Newton's Method
    - Optimization - local and absolute extrema and applications
- Taylor polynomials and special Taylor series (sin, cos, exp, 1/(1-x)), plus enough sequences and series to understand the radius of convergence; in particular the concept of series and convergence, the ratio test, and how to find the radius of convergence.
- Curve Sketching
- Integration
    - Definition of the definite integral
    - Areas of plane regions
    - Average value of a function
    - Fundamental Theorem of Calculus
    - Integration techniques: Substitution (including trig substitutions), parts, tables, partial fractions
    - At least one more application of integration
- Improper integrals: Evaluation and Convergence estimates
- Separable differential equations

The first-year Core Calculus - Science Stream suggests several additional topics to cover the remaining 25% of a standard one-year calculus experience. The CFYEC suggests the additional topics to best prepare students for success in second year:

- Sequences and Series; for example, the following tests: integral, comparison, alternating series, root, and limit ratio
- Polar coordinates and parametric equations (with calculus applications)

[1]http://www.bccat.ca/pubs/calculus.pdf (as of 16.Jul.2016) - pg 10
[2]http://www.bccat.ca/pubs/CoreCalcUpdate2013.pdf (as of 12.Jun.2018)

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- Complex numbers

CHEM I*[3]

Chemistry I* is a single course which combines the learning outcomes from both Chemistry I (CHEM I) and Chemistry II (CHEM II), the two standard chemistry courses within the first year of a Bachelor of Science program at most institutions.

Recommended Learning Outcomes:

- Understand the present model of atomic structure, and how it influences the periodic properties of the elements
- Understand present models of chemical bonding
- Understand how intermolecular interactions determine the properties and phases of matter
- Understand the principles of chemical thermodynamics, and how they relate to the spontaneity of chemical processes
- Know and practice proper laboratory procedures of safety and cleanliness
- Know and be proficient with basic techniques in quantitative and volumetric analysis, and spectrophotometry
- Be able to produce a properly structured laboratory report

For those institutions not offering CHEM I*, the following combinations would be acceptable:

- CHEM I and CHEM II (Standard BSc first-year Chemistry curriculum)
- CHEM I and a one-credit course such that the latter course includes the topics of thermochemistry, thermodynamics, and electrochemistry

CSCI I[4]

An introduction to programming is a required course by all receiving institutions although emphasis on practical applications of programming may vary. The programming language must be C or C++ and include:

Recommended Learning Outcomes

Program Comprehension

- Analyze and explain the behaviour of simple programs involving the fundamental programming constructs variables, expressions, assignments, I/O, control constructs, functions, parameter passing, and recursion.

Program Design and Implementation

- Design, implement, test, and debug a program that uses each of the following fundamental programming constructs: basic computation, simple I/O, standard conditional and iterative structures, the definition of functions, parameter passing, constants, and enumerated types.

Primitive Data Types

[3]Example from D. Friesen, CHEM 150 (VIU)

[4] Example from S. Carruthers, CSCI 160 (VIU)

- Identify and describe the appropriate use of primitive data types
- Write programs that use primitive data types

Conditional and Iterative Constructs

- Choose appropriate conditional and iteration constructs for a given programming task
- Modify and expand short programs that use standard conditional and iterative control structures and functions.

Functions

- Describe the purpose of function definitions
- Describe the importance of modularization when solving problems
- Break problems up into sub-problems using functions, when writing programs

Advanced Data Structures

- Write programs that use each of the following data structures: arrays, structs, strings.
- Write programs that use pointers for dynamic memory allocation and release
- Describe the concept of dynamic data structures and their uses
- Recognize the risks of pointers.

Code Quality

- Apply consistent documentation and program style standards
- Describe the importance of consistent documentation and program style standards
- Create readable and maintainable software using conventions like documentation and program style standards

ENGL I[5]

ENGL I is a standard university academic writing course historically required by all sending and receiving institutions. It typically consists of an introduction to critical thinking and reading, academic writing, and research skills consistent with the expectations of university. Within the common core context, it is *recommended* that this course be offered as a collaborative effort with ENGR I.

Recommended Learning Outcomes

- Analyze the rhetorical situation
- Explore technical and scientific topics
- Create effective persuasive documents
- Write effective academic prose
- Implement a structured writing process
- Create effective arguments, using appropriate evidence
- Practice the problem-solving process to develop creative and innovative solutions
- Collaborate on oral and written communication projects

ENGL II[6]

ENGL II focusses on communicating technical information clearly and concisely, managing issues of persuasion when communicating with diverse audiences, presentation skills, and

[5]Example from J. Eikenaar APSC 176 (UBC-O)
[6]Example from Distant Education, ENG 160 (NIC)

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teamwork. Within the common core context, it is *recommended* that this course be offered as a collaborative effort with ENGR II.

Recommended Learning Outcomes

- Understand and apply the key concepts of organizational communication and the writing process
- Establish the purpose(s) of a written or spoken discourse
- Analyze the target audience
- Apply the various strategies and general formats used to produce appropriate business correspondence (e.g. letters, memos & e-mails)
- Describe a variety of employment search skills and prepare an effective letter of application and a functional or targeted resume
- Apply the skills of document design (e.g. effective use of layout, headings, graphics, etc.)
- Develop effective descriptive writing skills frequently used to produce lengthy documents such as process descriptions or formal reports
- Research, plan, organize and prepare formal reports. (Table of Contents, List of Figures, Executive Summary, Body [i.e. effective layout, headings and subheadings], and APA documentation and with the appropriate in-text citations)
- Research, plan, and organize information to prepare unsolicited proposals
- Prepare and deliver effective presentations

ENGR I/II

An effective engineer requires a broad understanding of a large body of expertise, separate from and independent of the sciences. The increasing emphasis of the Canadian Engineering Accreditation Board (CEAB) on graduate attributes encourages developing students' understanding of engineering design, the engineering profession, and engineers' roles in society at a much earlier point in their academic career. Estimated coverage time for each topic is indicated in brackets in terms of instruction lecture and lab hours (lecture:lab).

Recommended Learning Outcomes

Engineering Design (20:20 hrs)	• Describe/identify tools within each Engineering Design Process step • Identify and engaging stakeholders • Identify project scope (function/constraints) • Integrate design considerations (e.g. environment, safety) • Identify and Consider risks and hazards • Use brainstorming and creative tools • Apply formal decision processes (e.g. Pugh, weighted decision matrix) • Build/test prototypes
Sustainability (8:8 hrs)	• Understand the three pillars of sustainability • Compare Traditional vs. Sustainable Design Criteria

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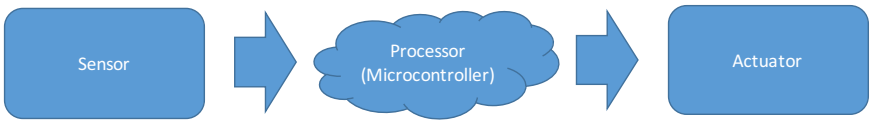
	• Apply life cycle assessment to a product • Describe the impact of human activity on health, safety, and environmental systems. • Suggested Instructional Activity: Case Studies
Engineering Drawing (10:10 hrs)	• Demonstrate sketching • Demonstrate isometric/multi-dimensional drawing • Use lines/angles/dimensioning in a drawing • Demonstrate CAD (e.g. Solidworks, 3D Fusion or similar) up to and including 3D sketching, exploded views. • Produce prototypes by interfacing CAD with fabrication tools (e.g. 3D printers)
Professionalism/Ethics Social/Professional Responsibility (2:2 hrs)	• Describe the CEAB core competencies • Apply continuous improvement • Describe the engineering code of ethics • Apply ethical conflict resolution • Suggested Instructional Activity: Case studies
Team work	• Understand group dynamics theory (e.g. Tuckman model) • Describe models for building successful teams • Apply conflict resolution techniques • Give/receive feedback effectively
Project Work (included as 10:10 workload within the topics above)	Students, working in teams, follow a structured process to design a sophisticated system comprising of multi-disciplinary subsystems (e.g. electrical, mechanical, and software) and include the following characteristics: • Demonstrate progress at several milestone stages with associated technical reporting • Client-based (e.g. the client prescribes the scope and constraints and verifies delivery) • Consider regulatory constraints, the business case, stakeholder interests and environmental considerations as part of an iterative project design • Develop a project consisting of the following structure: 

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LALG I

Linear Algebra is required by all receiving institutions although it can be numbered as either a 1st or 2nd year course. It is *suggested* that MATLAB (or equivalent tool) and its application be introduced to students as part of the course content, preferably as a lab component. A typical syllabus includes:

Recommended Learning Topics:

- Systems of linear equations and matrices
- Matrix algebra
- Determinants
- Linear independence and bases in R^n
- Linear transformations
- Eigenvalues and eigenvectors
- Applications of linear algebra

PHYS I/II

Collectively, these topics shown below typically comprise of what is equivalent to the first-year physics requirements for a BSc program at most institutions. Although the actual order of topics may vary from institution to institution, all topics must be covered to fulfill the CFYEC requirements. Recommended additional topics include RLC, LC circuits, Relativity, Gravitation, or Thermodynamics (if not covered in PHYS III). Estimated coverage time for each topic is indicated in brackets in terms of instruction lecture and lab hours (lecture:lab).

Recommended Learning Topics:

Kinematics and Vectors (~8:6 hrs)

- Vectors
- Projectile Motion
- Circular Motion

Dynamics (Mechanics) (~24:18 - 32:24 hrs)

- Newton's Laws and Free Body Diagrams
- Friction
- Work and Energy
- Conservation Forces, Potential Energy, Work-Energy Theorem
- Rotational Kinetics, Moment of Inertia, Torque
- Rotational Dynamics
- Angular Momentum and Rolling Bodies

Waves and Optics (~24:18 - 32:24 hrs)

- Physical Optics - Reflection, Refraction, and Lenses
- Simple Harmonic Motion and Pendulums
- Waves, Sound, Interference, and Standing Waves, Doppler Effect
- Wave Optics - Superposition, Interference, Reflection
- Properties of EM waves, Light, and Polarization

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Electronics (~12:9 hrs)

- DC Circuits: Ohm's Law, Kirchoff's Law
- RC Circuits
- AC Circuits

Quantum Physics (~4:3 hrs)

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APPENDIX B: Additional Requirements - Thompson Rivers University

Curriculum

Thompson Rivers University requires the following curriculum content, nominally captured in the course package entitled PHYS III:

Thermodynamics	Zeroth Law and Heat Capacity	
	Kinetic Theory, First Law of Thermodynamics	
	Heat Engines	
Mechanics	Chpt 1.1-1.6	General Principles
	Chpt 2.1-2.9 (excl. 2.4)	Force Vectors
	Chpt 3.1-3.4	Equilibrium of a Particle
	Chpt 4.1-4.10	Moments
	Chpt 5.1-5.7	Rigid Body
	Chpt 6.1-6.6	Structural Analysis
	Chpt 7.1-7.3	Internal Forces
	Chpt 8.1-8.4	Friction
	Chpt 12.1-12.8	Kinematics
	Chpt 13.1-13.6	Kinetics

*Mechanics material drawn from Hibbler, R.C., *Statics and Dynamics*, 13th Edition (2013)

Minimum AU/GA Delivery Requirements

Course	Cred.	Lec	Lab/Tut	Total AU	M	NS	M+NS	CS	ES	ED	ES+ED
PHYS III	3	4	-	48		24	24	-	24	-	24
Total				**579**	**144**	**213**	**357**	**89**	**99**	**34**	**133**

Transfer Pathway

This transfer agreement provides for a direct transfer into second year of a Bachelor of Applied Science (Engineering) at Thompson Rivers University. Individual course equivalencies, established in the BC Transfer Guide, form the foundation of this agreement. The following conditions will apply:

- Students progressing into the Bachelor of Engineering in Software Engineering at Thompson Rivers University will be **required** to successfully complete:
  - MATH 1700 – *Discrete Mathematics*, and
  - SENG 1210 – *Programming for Engineers II*.

  at the earliest scheduled date for each course at that institution to validate their transfer.

- Students fully completing the CFYEC will receive transfer credit for:
  - CHEM 1520 – *Principles of Chemistry,*

  Which is course is normally scheduled in Year 2 at TRU.

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- Applicants who have successfully completed all courses within the CFYEC with a *minimum TRU GPA of C+ (or TRU GPA of 2.33) and have no courses applicable for transfer with a grade less than a 'C'* will be guaranteed second year standing within the Bachelor of Engineering in Software Engineering at TRU.

- Applications from the CFYEC must follow all applications procedures at TRU, including applying for admission and submitting post-secondary and high school academic transcripts.

Course-to-Course Transfer (BCCAT)

Course	TRU
CALC I	MATH 1130
CALC II	MATH 1230
CHEM I*	CHEM 1520
CSCI I	SENG 1110
ENGL I	ENGL 1100
ENGL II	CMNS 1290

Course	TRU
ENGR I	ENGR 1100
ENGR II	ENGR 1200
LALG I	MATH 1300
PHYS I	EPHY 1170
PHYS II	EPHY 1270
PHYS III	EPHY 1700

Approved by:

_____ _____

Name / Title (Print) Signature

APPENDIX C: Additional Requirements - University of British Columbia (Okanagan Campus)

Curriculum

The University of British Columbia (Okanagan Campus) requires the following curriculum content, nominally captured in the course package entitled PHYS III:

Thermodynamics	Zeroth Law and Heat Capacity	
	Kinetic Theory, First Law of Thermodynamics	
	Heat Engines	
Mechanics	Chpt 1.1-1.6	General Principles
	Chpt 2.1-2.9 (excl. 2.4)	Force Vectors
	Chpt 3.1-3.4	Equilibrium of a Particle
	Chpt 4.1-4.10	Moments
	Chpt 5.1-5.7	Rigid Body
	Chpt 6.1-6.6	Structural Analysis
	Chpt 7.1-7.3	Internal Forces
	Chpt 8.1-8.4	Friction
	Chpt 12.1-12.8	Kinematics
	Chpt 13.1-13.6	Kinetics

*Mechanics material drawn from Hibbler, R.C., *Statics and Dynamics*, 13th Edition (2013)

Minimum AU/GA Delivery Requirements

Course	Cred.	Lec	Lab/Tut	Total AU	M	NS	M+NS	CS	ES	ED	ES+ED
PHYS III	3	4	-	48		24	24	-	24	-	24
Total				**579**	**144**	**213**	**357**	**89**	**99**	**34**	**133**

Transfer Pathway

Applicable to the following institutions only:

Capilano University
College of New Caledonia
Kwantlen Polytechnic University
Langara College
Selkirk College
Thompson Rivers University
University of the Fraser Valley
Vancouver Island University

The CFYEC provides a seamless transfer into second year engineering at UBC. This formal agreement is based both on individual course equivalencies established in the BC Transfer Guide as well as recognition of course groupings specific to the CFYEC.

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- Students completing the entire CFYEC within two terms (typically eight months), no later than 30-Jun, and with a minimum CGPA[7] or higher will be guaranteed placement at UBC.
- Students completing the terms of this agreement will compete on an equal footing with UBC students for placement in their first choice of engineering program in second year at UBC.
- For the purposes of this agreement, ENGL II will be considered as a complementary elective towards later engineering studies at UBC.

For all remaining institutions, this agreement guarantees that a student completing the full CFYEC will be considered as completing the first-year engineering curriculum at UBC. Admission into second year is not, however, guaranteed, and will be approved based on CGPA and available seats.

Course-to-Course Transfer (BCCAT)

Course	UBC-O
CALC I	APSC 172
CALC II	APSC 173
CHEM I*	APSC 180
PHYS I	APSC 181
PHYS III	APSC 182
	APSC 183
CSCI I	APSC 177

Course	UBC-O
ENGL I	APSC 176
ENGL II	N/A
ENGR I	APSC 169
ENGR II	APSC 171
LALG I	APSC 179
PHYS II	APSC 178

Approved by:

_____ _____

Name / Title (Print) Signature

[7]Minimum CGPA will be reviewed annually and reported at the BCCAT Engineering articulation committee meeting in the year prior to the expected UBC start date.

APPENDIX D: Additional Requirements - University of British Columbia (Point Grey Campus)

Curriculum

The University of British Columbia (Point Grey Campus) requires the following curriculum content, nominally captured in the course package entitled PHYS III:

Thermodynamics	Zeroth Law and Heat Capacity	
	Kinetic Theory, First Law of Thermodynamics	
	Heat Engines	
Mechanics	Chpt 1.1-1.6	General Principles
	Chpt 2.1-2.9 (excl. 2.4)	Force Vectors
	Chpt 3.1-3.4	Equilibrium of a Particle
	Chpt 4.1-4.10	Moments
	Chpt 5.1-5.7	Rigid Body
	Chpt 6.1-6.6	Structural Analysis
	Chpt 7.1-7.3	Internal Forces
	Chpt 8.1-8.4	Friction
	Chpt 12.1-12.8	Kinematics
	Chpt 13.1-13.6	Kinetics

*Mechanics material drawn from Hibbler, R.C., *Statics and Dynamics*, 13th Edition (2013)

Minimum AU/GA Delivery Requirements

Course	Cred.	Lec	Lab/Tut	Total AU	M	NS	M+NS	CS	ES	ED	ES+ED
PHYS III	3	4	-	48		24	24	-	24	-	24
Total				**579**	**144**	**213**	**357**	**89**	**99**	**34**	**133**

Transfer Pathway

Applicable to the following institutions only:

Capilano University
College of New Caledonia
Kwantlen Polytechnic University
Langara College
Selkirk College
Thompson Rivers University
University of the Fraser Valley
Vancouver Island University

The CFYEC provides a seamless transfer into second year engineering at UBC. This formal agreement is based both on individual course equivalencies established in the BC Transfer Guide as well as recognition of course groupings specific to the CFYEC.

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- Students completing the entire CFYEC within two terms (typically eight months), no later than 30-Jun, and with a minimum CGPA[8] or higher will be guaranteed placement at UBC.
- Students completing the terms of this agreement will compete on an equal footing with UBC students for placement in their first choice of engineering program in second year at UBC.
- For the purposes of this agreement, ENGL II will be considered as a complementary elective towards later engineering studies at UBC.

For all remaining institutions, this agreement guarantees that a student completing the full CFYEC will be considered as completing the first-year engineering curriculum at UBC. Admission into second year is not, however, guaranteed, and will be approved based on CGPA and available seats.

Course-to-Course Transfer (BCCAT)

Course	UBC-V
CALC I	MATH 100
CALC II	MATH 101
CHEM I*	CHEM 154
CSCI I	APSC 160
ENGL I	ENGL 112
ENGL II	CS I
ENGR I	APSC 100
ENGR II	APSC 101

Course	UBC-V
LALG I	MATH 152
PHYS I	PHYS 157
PHYS II	PHYS 158
	PHYS 159
PHYS III	PHYS 170

Approved by:

_____ _____

Name / Title (Print) Signature

[8]Minimum CGPA will be reviewed annually and reported at the BCCAT Engineering articulation committee meeting in the year prior to the expected UBC start date.

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APPENDIX E: Additional Requirements - University of Victoria

Curriculum

The University of Victoria (UVic) requires the following curriculum content, nominally captured in the course package entitled PHYS III:

Thermodynamics	Zeroth Law and Heat Capacity	
	Kinetic Theory, First Law of Thermodynamics	
	Heat Engines	
Mechanics	Chpt 1.1-1.6	General Principles
	Chpt 2.1-2.9 (excl. 2.4)	Force Vectors
	Chpt 3.1-3.4	Equilibrium of a Particle
	Chpt 4.1-4.10	Moments
	Chpt 5.1-5.7	Rigid Body
	Chpt 6.1-6.6	Structural Analysis
	Chpt 7.1-7.3	Internal Forces
	Chpt 8.1-8.4	Friction
	Chpt 12.1-12.8	Kinematics
	Chpt 13.1-13.6	Kinetics

*Mechanics material drawn from Hibbler, R.C., *Statics and Dynamics*, 13th Edition (2013)

Minimum AU/GA Delivery Requirements

Course	Cred.	Lec	Lab/Tut	Total AU	M	NS	M+NS	CS	ES	ED	ES+ED
PHYS III	3	4	-	48		24	24	-	24	-	24
Total				**579**	**144**	**213**	**357**	**89**	**99**	**34**	**133**

Transfer Pathway

This transfer agreement provides for a direct transfer into second year Engineering at the University of Victoria. Individual course equivalencies, established in the BC Transfer Guide, form the foundation of this agreement. The following conditions will apply:

- ENGR 130 (Introduction to Professional Practice) must be completed by all students in the program soon after they begin in a UVic Engineering Program
- This transfer agreement features guaranteed admission into second year of one of the Bachelor of Engineering programs for students who have successfully completed all of the course in the agreement with a *minimum UVIC GPA of C+ (or UVic 3.0)* and who have *no course transferrable to a UVic Engineering program with a grade less than a C.*
- Students accepted under this agreement will complete on an equal footing with UVic students for placement in their chosen engineering program.

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Course-to-Course Transfer (BCCAT)

Course	UVic
CALC I	MATH 100
CALC II	MATH 101
CHEM I*	CHEM 150
CSCI I	CSC 110
ENGL I **ENGR I**	ENGR 110
ENGL II **ENGR II**	ENGR 120

Course	UVic
LALG I	MATH 110
PHYS I **PHYS II** **PHYS III**	PHYS 110 PHYS 111 ENGR 141

Approved by:

_____ _____

Name / Title (Print) Signature

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APPENDIX F: Additional Requirements - University of Northern BC

Curriculum

The University of Northern British Columbia requires the second half of the standard first-year Chemistry offered within a typical BSc program. The combination of CHEM I/CHEM I* and CHEM II will emphasize:

Classification of matter, periodic properties of elements, atomic and molecular structure, stoichiometry, chemical reactions, thermochemistry, chemical bonding an introduction to organic chemistry, intermolecular forces, properties of solutions, reaction kinetics, chemical equilibrium, acids and bases, applications of aqueous equilibria, entropy and free energy, and electrochemistry

Minimum AU/GA Delivery Requirements

Course	Cred.	Lec	Lab/Tut	Total AU	M	NS	M+NS	CS	ES	ED	ES+ED
CHEM II	4	4	3	63		63	63	-	-	-	-
Total				**594**	**144**	**252**	**396**	**89**	**75**	**34**	**109**

Transfer Pathway

This transfer agreement provides for a direct transfer into second year Engineering at the University of Northern British Columbia. Individual course equivalencies, established in the BC Transfer Guide, form the foundation of this agreement. The following conditions will apply:

- Students completing the entire CFYEC within two terms (typically eight months), no later than 30-Apr, and with a minimum CGPA[9] or higher will be guaranteed placement within the Bachelor of Applied Science in Environmental Engineering at UNBC.

- Applications from the CFYEC must follow all applications procedures at UNBC, including applying for admission and submitting post-secondary and high school academic transcripts.

[9]Minimum CGPA will be reviewed annually and reported at the BCCAT Engineering articulation committee meeting in the year prior to the expected UNBC start date.

Course Block Transfers (BCCAT)

Course	UNBC
CALC I	MATH 100
CALC II	MATH 101
CHEM I*	CHEM 100 CHEM 120
CSCI I	CPSC 110
ENGL I	N/A
ENGL II	ENGR 110
ENGR I **ENGR II**	ENGR 117 ENGR 151 ENGR 152

Course	UNBC
LALG I	MATH 220
PHYS I **PHYS II**	PHYS 110 PHYS 111
CHEM II	CHEM 101 CHEM 121

Approved by:

_____ _____

Name / Title (Print) Signature

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APPENDIX G: Definitions

Articulation Unit (AU)	Defined on an hourly basis for an activity which is granted academic credit and for which the associated number of hours corresponds to the actual contact time of that activity between the student and the faculty members, or designated alternate, responsible for delivering the program: • one hour of lecture (corresponding to 50 minutes of activity) = 1 AU • one hour of laboratory or scheduled tutorial = 0.5 AU This definition is applicable to most lectures and periods of laboratory or tutorial work. Classes of other than the nominal 50-minute duration are treated proportionally. In assessing the time assigned to determine the AU of various components of the curriculum, the actual instruction time exclusive of final examinations should be used
Mathematics (M)	Includes appropriate elements of linear algebra, differential and integral calculus, differential equations, probability, statistics, numerical analysis, and discrete mathematics.
Natural Sciences (NS)	Include elements of physics and chemistry; elements of life sciences and earth sciences may also be included in this category. These subjects are intended to impart an understanding of natural phenomena and relationships through the use of analytical and/or experimental techniques.
Engineering Science (ES)	Involves the application of mathematics and natural science to practical problems. This may involve the development of mathematical or numerical techniques, modeling, simulation, and experimental procedures. Such subjects include, among others, the applied aspects of strength of materials, fluid mechanics, thermodynamics, electrical and electronic circuits, soil mechanics, automatic control, aerodynamics, transport phenomena, and elements of materials science, geoscience, computer science, and environmental science. In addition to program-specific engineering science, the curriculum must include engineering science content that imparts an appreciation of the important elements of other engineering disciplines.
Engineering Design (ED)	Integrates mathematics, natural sciences, engineering sciences, and complementary studies in order to develop elements, systems, and processes to meet specific needs. It is a creative, iterative, and open-ended process, subject to constraints which may be governed by standards or legislation to varying degrees depending upon the discipline. These constraints may also relate to economic, health, safety, environmental, societal or other interdisciplinary factors.

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Complementary Studies (CS)

Include humanities, social sciences, arts, management, engineering economics and communications that complement the technical content of the curriculum. While considerable latitude is provided in the choice of suitable content for the complementary studies component of the curriculum, some areas of study are essential in the education of an engineer. Accordingly, the curriculum must include studies in the following:

a) Subject matter that deals with the humanities and social sciences
b) Oral and written communications
c) Professionalism, ethics, equity and law
d) The impact of engineering on society
e) Health and safety
f) Sustainable development and environmental stewardship
g) Engineering economics and project management

Graduate Attributes (GA)

The institution must demonstrate that the graduates of a program possess the attributes under the following headings. The attributes will be interpreted in the context of candidates at the time of graduation. It is recognized that graduates will continue to build on the foundations that their engineering education has provided[10].

1. A knowledge base for engineering: Demonstrated competence in university level mathematics, natural sciences, engineering fundamentals, and specialized engineering knowledge appropriate to the program
2. Problem Analysis: An ability to use appropriate knowledge and skills to identify, formulate, analyze, and solve complex engineering problems in order to reach substantiated conclusions.
3. Investigation: An ability to conduct investigations of complex problems by methods that include appropriate experiments, analysis and interpretation of data, and synthesis of information in order to reach valid conclusions.
4. Design: An ability to design solutions for complex, open-ended engineering problems and to design systems, components or processes that meet specified needs with appropriate attention to health and safety risks, applicable standards, and economic, environmental, cultural and societal considerations.

[10]From https://engineerscanada.ca/sites/default/files/Graduate-Attributes.pdf (fetched 04.May.2018)

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5. Use of Engineering Tools: An ability to create, select, apply, adapt, and extend appropriate techniques, resources, and modern engineering tools to a range of engineering activities, from simple to complex, with an understanding of the associated limitations.
6. Individual and Team work: An ability to work effectively as a member and leader in teams, preferably in a multidisciplinary setting.
7. Communication Skills: An ability to communicate complex engineering concepts within the profession and with society at large. Such ability includes reading, writing, speaking and listening, and the ability to comprehend and write effective reports and design documentation, and to give and effectively respond to clear instructions.
8. Professionalism: An understanding of the roles and responsibilities of the professional engineer in society, especially the primary role of protection of the public and the public interest.
9. Impact of Engineering on Society and the Environment: An ability to analyze social and environmental aspects of engineering activities. Such ability includes an understanding of the interactions that engineering has with the economic, social, health, safety, legal, and cultural aspects of society, the uncertainties in the prediction of such interactions; and the concepts of sustainability design and development and environmental stewardship.
10. Ethics and Equality: An ability to apply professional ethics, accountability, and equity.
11. Economics and Project Management: An ability to appropriately incorporate economics and business practices including project, risk, and change management into the practice of engineering and to understand their limitations.
12. Life-long Learning: An ability to identify and to address their own educational needs in a changing world in ways sufficient to maintain their competence and to allow them to contribute to the advancement of knowledge.

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APPENDIX H: REVISION HISTORY

Version	Comments	Date
1.00	Initial Draft	21.Aprl.2018
1.01	Minor editing; CHEM II topical coverage replace by learning outcomes; ENGR I/II description updated; page numbers and header added; order of terms adjusted. P.Eng/Eng.L requirement added to specific course loads. PHYS III credits reduced to 3; editorial changes; addition of FOIPA requirement to access to applicant requirement; Canada-wide professional requirement from BC-only	27.Apr.2018
1.02	GA filled in from Engineers Canada reference; P.Eng/Eng.L requirement added to PHYS III; Added - Sending term suggestion to articulate course packages as much as possible	04.May.2018
1.1	P.Eng/Eng.L requirement removed from PHYS III (AUs adjusted accordingly for impacted institutions); CALC I/II description adjusted to match the first-year core calculus - science stream; Sequences and series, complex numbers, and polar coordinates and parametric equations added as recommended additional topics; MATLAB content LALG I changed to suggested; Course block transfers to each major receiving institution for units in the common curriculum added as Appendix I; Definitions renumbers as Appendix J; Term shorten to 12 effective weeks (AUs/GAs adjusted accordingly); GAs explicitly claimed in main text; Assessment methods removed from course unit descriptions ; PHYS I/II description re-structured.	24.May.2018
1.11	Clarity added to signature sheets; Pathway material is provided; Learning Outcomes header replaced by Learning Topics for some courses; Learning Outcome statements adjusted to better reflect a learning outcome; hours added to ethics/profession; impact on environment LO added to sustainability topic.	02.Jun.2018
1.12	Course-by-course articulation wording strengthened; clarity on term lengths; Adjustment to effective dates for change requests and withdrawal; Math curriculum update (2013) reflected; SFU Transfer pathway/requirements updated; Course-by-course transfers moved to Institutional appendix; P.Eng/Eng.L equivalency statement added;Minor edits.	12.Jun.2018

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1.122	Minor editing. Agreed to by UBC, UVic, and UNBC at this iteration.	28.Aug.2018
1.123	Minor change to AU counts; Transfer pathway added to UNBC; TRU transfer pathway added	22.Nov.2018
1.130	Removed SFU pathways; Correct typo in UNBC requirements; Added signature lines for sending and receiving institutions.	28.Jan.2020
1.131	College of the Rockies added to signature page.	06.Feb.2020
1.40	Section 2.0*f* amended to include a good faith description and appropriate wording changes; TRU Appendix adjusted to reflect current practice; Signature page updated to reflect only capacity grant recipients and those who have explicitly indicated intent to sign.	12.Feb.2020

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UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

Motion Number (assigned by Steering Committee of Senate): S-202008.05

SENATE COMMITTEE ON ACADEMIC AFFAIRS

PROPOSED MOTION

Motion: That the Vancouver Island University - University of Northern British Columbia Engineering Transfer Agreement based on the Common First-Year Engineering Curriculum Agreement (CFYEC) agreement be approved as proposed.

Effective Date: September 2020

Rationale: This agreement specifically maps courses from the VIU Engineering Transfer Certificate (ETC) program to 1st year UNBC courses to allow seamless transition for successful VIU students into 2nd year engineering at UNBC. Based on the CFYEC agreement. See attachment for Vancouver Island University - University of Northern British Columbia Engineering Transfer Agreement details.

Motion proposed by: Engineering

Academic Program: Engineering

Implications for Other Programs / Faculties? None

College: CSAM

College Council / Committee Motion Number: not applicable

College Council / Committee Approval Date: not applicable

Attachment Pages (if applicable): 3 pages

INFORMATION TO BE COMPLETED AFTER SENATE COMMITTEE ON ACADEMIC AFFAIRS MEETING

Brief Summary of Committee Debate:

Motion No.: SCAAF

Moved by: **Seconded by:**

Committee Decision:

Approved by SCAAF: _____ _____
Date **Chair's Signature**

For recommendation to ✓ **, or information of** _____ **Senate.**

Vancouver Island University - University of Northern British Columbia Engineering Transfer Agreement

Vancouver Island University (VIU) is a fully accredited public post-secondary institution that enrolls approximately 8500 FTE students per year in a variety of academic and trades programs. VIU has four campuses through the mid-Island region and BC mainland coast including the main Nanaimo campus and satellite campuses at Parksville, Cowichan, and Power River.

In order to better serve its community, VIU offers the Engineering Transfer Certificate (ETC) program which can be used for transfer into the University of Northern British Columbia (UNBC) Bachelor of Applied Science (Engineering). This document confirms the details of the VIU - UNBC Transfer agreement.

- The VIU - UNBC Transfer program assures the curriculum content for students to transfer into second year of the Bachelor of Applied Science (Engineering) at UNBC. This formal agreement is based on both individual course equivalences established in the BC Transfer Guide as well as recognition of course groups specific to this agreement.

- VIU applicants who have completed the entire first-year engineering transfer program (as identified in Table 1) at VIU within two years, no later than April 30th, with a GPA of 2.0 or higher, and no course grade less than a 'C-' will be guaranteed placement within the Bachelor of Applied Science (Engineering) at UNBC.

- Applications from the VIU ETC must follow all applications procedures at UNBC, including applying for admission and submitting post-secondary and high school academic transcripts.

- UNBC agrees to post information on its website regarding the VIU ETC program, and UNBC Student Recruitment and the UNBC College of Science and Engineering will promote the transfer program option when meeting with high schools. The VIU ETC program agrees to post information on its website regarding the Bachelor of Applied Science (Engineering) at UNBC, and promote this transfer option to its students.

- UNBC may participate in a VIU transfer information session at least once a year to provide information about programs within the UNBC College of Science and Engineering.

This agreement is effective for transfer to UNBC starting in the 2020/21 academic year and will be reviewed annually with respect to curriculum, course equivalencies, transfer admission criteria, timeliness etc... Changes to this agreement (including its cancellation) will require a minimum of **two years** notice to either party.

Table 1. Required Courses for the VIU - UNBC Transfer Agreement

VIU	UNBC	UNBC Title	Comment
CSCI 160	CPSC 110	Introduction to Computer Systems and Programming	
ENGL 204	ENGR 110	Technical Writing	
ENGR 112 + ENGR 121	ENGR 117 + ENGR 151 + ENGR 152		See Note #1
MATH 100 (or MATH 121)	MATH 100	Calculus I	
MATH 101 (or MATH 122)	MATH 101	Calculus II	
MATH 141	MATH 220	Linear Algebra	
CHEM 150	CHEM 1XX + CHEM 120	CHEM 120 General Chemistry Laboratory I	Waive CHEM 100 General Chemistry I
PHYS 121	PHYS 110	Introductory Physics I: Mechanics /	
PHYS 122	PHYS 111	Introductory Physics II: Waves and Electricity	For students transferring into the environmental engineering program, waive CHEM 101 General Chemistry II / CHEM 121 General Chemistry Laboratory II. See Note #2 for more details.
ENGM 141 (or ENGR 214)	ENGR 130	Mechanics of Materials I	

Note #1 - UNBC accepts the block transfer of VIU ENGR 112 / ENGR 121 as equivalent to UNBC ENGR 117 / ENGR 151 / ENGR 152 for the purposes of the VIU - UNBC Transfer only.

Note #2 – For students transferring into the Environmental Engineering Program, students will be required to take UNBC CHEM 101/121 if they wish to take FSTY 205 and subsequent soil science courses upon transfer (electives in the environmental engineering program). Alternatively, to meet prerequisite requirements for elective courses (e.g. FSTY 205), students can take both VIU CHEM 140 and CHEM 142 in place of VIU CHEM 150. VIU CHEM 140 and CHEM 142 articulate to UNBC CHEM 100/120 and CHEM 101/121 respectively.

SIGNATORIES
The VIU - UNBC Transfer agreement is signed on behalf of:

_____ _____
Carol Stuart, Date
Vice President Academic and Provost
Vancouver Island University

_____ _____
Harry Janzen, Date
Interim Dean, Faculty of Science and Technology
Vancouver Island University

_____ _____
UNBC Date

_____ _____
UNBC Date

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Motion Number (assigned by SCS): S-202008.06

STEERING COMMITTEE OF SENATE

PROPOSED MOTION

Motion: That, on the recommendation of the Steering Committee of Senate, the Senate Committee Academic Appeals and the Senate Committee on Student Discipline Appeals be dissolved and subsequently be removed from the Senate Handbook.

Effective Date: Upon the approval of Senate

Proposed by: Office of the University Secretariat

Faculty / Academic Department:

Implications for Other Programs / Faculties: None

Rationale: These committees have been replaced by the Senate Committee on Student Appeals that was approved by Senate in January 2020 and added to the Senate Handbook at that time. There are currently no active appeals before either of these committees.

TO BE COMPLETED AFTER SCS MEETING

Brief Summary of Committee Debate:

Motion No.: SCS202008.03

Moved by: H. Holler-Busch **Seconded by:** C. Ho Younghusband

Committee Decision: CARRIED **Attachments:** 0

Approved by SCS August 19, 2020 _____

Date **Chair's Signature**

For recommendation to ✓ **, or information of** _____ **Senate.**

SENATE COMMITTEE ON ACADEMIC APPEALS (SCAA)

Terms of Reference:

- To review and rule on appeals for students related to academic discipline and standing.
- To review, periodically, the Academic Regulations as they relate to the appeals process, and recommend changes to the Senate Committee on Academic Affairs.

Membership:

Four Faculty Members, including:
  a) two faculty Senators (one from each College)
  b) one from a professional program
Three Student Senators, including:
  a) a graduate student
  b) an undergraduate student
  c) an aboriginal student if possible
One Lay Senator
Secretary of Senate (non-voting)

Chair: A member of Senate elected annually in October by and from the members of the Committee

Committee Secretary: Secretary of Senate

Recording Secretary: Governance Officer

Quorum: Majority, including at least one student and two faculty members

Reporting Month: October

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~~SENATE COMMITTEE ON STUDENT DISCIPLINE APPEALS (SCSDA)~~

~~Terms of Reference:~~

- ~~The mandate of the Committee is to hear and rule on cases of student discipline appeals made pursuant to the "Guidelines for Student Conduct" as set out in the Undergraduate and Graduate Calendars.~~
- ~~to review periodically the procedures for dealing with student discipline appeals, and recommend changes to Senate~~

~~Membership:~~

~~Two Faculty Senators, one from each College~~
~~Three students, including:~~
~~a) a graduate student~~
~~b) an undergraduate student~~
~~c) a First Nations Student~~
~~One member of the administrative staff~~
~~Secretary of Senate (non-voting)~~

~~Chair:~~ ~~A member of Senate elected annually in October by and from the members of the Committee~~

~~Committee Secretary:~~ ~~Registrar or designate~~

~~Recording Secretary:~~ ~~Governance Officer~~

~~Quorum:~~ ~~Majority, including at least one student~~

~~Reporting Month:~~ ~~September~~

SENATE COMMITTEE ON STUDENT APPEALS (SCA)

Background and Purpose:

The University Act of British Columbia [RSBC 1996] c. 468, grants Senate the power:

> *37(1) (v) to establish a standing committee of final appeal for students in matters of academic discipline.*

And, provides at s. 61 ***suspension of a student***

> *61(1) The president has the power to suspend and deal summarily with any matter of student discipline.*
>
> *(2) On the exercise of that power, the president must promptly report the action to the standing committee established under section 37(1)(v) with a statement of his or her reasons*
>
> *(3) The action of the president is final and subject in all cases to an appeal to the senate.*

Terms of Reference:

- On behalf of Senate, to review and rule on all final appeals from students with respect to:
  - Matters involving academic discipline and standing, and;
  - Matters involving non-academic conduct resulting in suspension.
- To periodically review and provide feedback and recommendations to Senate with respect to University Policies, Procedures and Calendar Regulations, dealing with Student Academic and Non-Academic Conduct and Appeals.

Membership:

Eight (8) voting members appointed by Senate:

(i) Five (5) faculty members, including:

a) One faculty member, ideally, from each of the five Faculties, at least three of whom should be Senators, and at least one of whom should be from a professional program

(ii) Three (3) students, including:

a) One graduate student Senator
b) One undergraduate student Senator
c) One Student at Large (who may also be a student Senator), and who ideally is an Aboriginal student

Chair:	A Member of Senate elected annually in October by and from among the members of the Committee.
Committee Secretary:	Secretary of Senate
Recording Secretary:	Governance Officer
Quorum:	Majority, including at least two Faculty Members and one Student
Reporting Month:	October