

CHEMISTRY – BIOLOGY JOINT 2019 ARTICULATION MEETING
BRITISH COLUMBIA COUNCIL ON ADMISSIONS AND TRANSFER
Langara College – Vancouver, BC
 Technology Building, T Gallery, Second Floor

Institution	Name	Institution	Name
In attendance:			
Alexander College	Miriam Grob	Langara College	Todd Stuckless (Host)
BC Institute of Technology	Jimmy Lowe	North Island College	Sherrie Wang
Camosun College	Neil Meanwell	Okanagan College	Jasmine Korčok
Capilano University	Urmila Deo Jangra	QUEST University Canada	Emma Davy
Coast Mountain College	Reto Riesen	Simon Fraser University	Evon Khor
College of New Caledonia	Kara Crosina	Simon Fraser University	Nabyl Merbouh
College of the Rockies	David Dick	Thompson Rivers University	Bruno Cinel
Columbia College	Taraneh Lajevardi	Trinity Western University	Paul Brown
Columbia College	John Agak	University of BC - O	Tamara Freeman
Columbia College	Joanna DeWitt	University of BC - V	Pierre Kennepohl
Coquitlam College	Sheenam Girdhar	University of Northern BC	Todd Whitcombe (Chair)
Coquitlam College	Amanda Gronotte	University of Victoria	Violeta Iosub
Douglas College	Hanifa Jalali	Vancouver Community College	Judith Wallace
Kwantlen Polytechnic University	Patrick Duffy	Vancouver Island University	Jessie Key
Langara College	Kelly Sveinson (Host)	Yukon College	Ernie Prokopchuk
Langara College	Patricia Aroca-Oullette (Host)		
Guests:			
Langara	Gerda Krause	BCCAT	Rob Adamoski
BCCAT	Fiona McQuarrie	DQAB	Doug Owrarn
ONCAT	Carolyn Poplak	ONCAT	Yvette Munro
Regrets:			
Selkirk College	Jason De Costa	BC Institute of Technology	Jennifer Wolfe
University of the Fraser Valley	David Fenske	Northern Lights	Cynthia Broberg

1. Call to order

8:30 am, Meeting Chair: Todd Whitcombe (UNBC)

2. Welcome to this House of Teachings: Dr. Gerda Krause, Dean of Science, Todd Whitcombe, Chemistry Articulation Chair, Tara Stehelin, Biology Articulation Chair

Dr. Gerda Krause:

- Langara is pleased to host both Biology and Chemistry Articulation Committees
- Langara is located in the unceded territory of the Musqueam First Nations
- Musqueam name of Langara: House of Teachings

Todd Whitcombe and Tara Stehelin:

- Joint Meeting between Biology and Chemistry this year, as many commonalities between two disciplines and opportunities for collaboration

- Welcome two guests from ONCAT, Carolyn Poplak and Yvette Munro

3. Presentation from Degree Quality Assessment Board (DQAB): Dr. Doug Owram

Overview of DQAB (Degree Quality Assessment Board)

- Independent advisory board that ensures legislative quality assurance requirements are met, comprised of part-time volunteer committee
- Arose out of need to reassure public of efficient use of public funds
- The Board is arms-length in order when assessing institutions, ensuring standards but also granting institutions autonomy with the end of goal of consistency and quality of degree programs across Canada
- DQAB advises the Ministry of Education regarding the approval/non-approval of new degree programs

Trends in BC within past few years:

- More colleges have expanded into degree granting institutions and there is a general increase for more degree programs
- An increase of international students: BC per capita has the highest amount of international students, some institutions are comprised of 80-100% international students

Review process for new degree requests:

- Stage 1: Is the new program necessary in terms of job demand? Is the program of benefit to students, to province (regionally and provincially) and the post-secondary system?
- Stage 2:
 - Non-Exempt (Private institutions only) – Does this institution have the capacity to provide this degree? If the institution is out of province, can the institution use the term “university” in BC? Program review takes approximately 5 years
 - Exempt: Institutions that already have experience with offering degree programs in BC
 - Once this stage is reached, the proposed degree program will likely be approved by both DQAB and the Ministry of Education
 - Currently 150-160 pending proposals, approximately 90% proposals reach stage 2

Challenges:

- Regional vs. Provincial needs; degree program needed at both levels? May be needed at regional level, but not provincial level
- Understanding of the labour market; will degree programs translate into jobs, how accurate can predictions be about the next decade?
- International vs. domestic demand; how do international students fit into the system post-graduation, if at all?
- Co-operation
- Core programs vs. Stage 1 criteria

4. Presentation from Ministry of Health (MoE)

<https://curriculum.gov.bc.ca/sites/curriculum.gov.bc.ca/files/pdf/curriculum-comparison-guide.pdf>

Guiding Principles of Curriculum Design:

- Concept-Based, Competency-Driven Curriculum for Biology 11/12, Chemistry 11/12
- Allows teachers to be creative, innovative and allows for flexibility and choice for teachers and student
- Emphasizes higher order learning and incorporates First Nations concepts into curriculum
- Based on BC’s Know-Do-Understand Model, which talks about the “Story of Science” and focuses on what students should be able to “do and know” as an outcome of the learning, i.e. the core competencies (<https://curriculum.gov.bc.ca/competencies>)
- Core Competencies that support life-long learning on a continuum: creative thinking, critical thinking,

communication, Positive Personal/Cultural Identity, Personal Awareness and Responsibility, Social Awareness and Responsibility

Staying the same in the curriculum:

- Provincial curriculum by subject and grade
- Course structures for grades 10-12
- Authorized courses to complement provincial curriculum
- Cohesion with post-secondary (close connections)

Changing in the curriculum:

- Increasing course options for students
- Embedding literacies and competencies into curriculum
- Incorporating Indigenous knowledge and perspectives in all subjects and grades
- More career courses
- Establishing continuous improvement cycle to keep curriculum current

5. Presentation from BCCAT: Dr. Robert Adamoski, Director of Research and Admissions at BCCAT

Please feel free to join BCCAT Mailing list. Emails out once a month, an easy way to stay apprised. Please feel free to visit website, there are nomination materials

BCCAT is reliant on work your institution does, thank you for all of your support.

Current projects:

Recent publications:

- Understanding Advanced Placement Grading in BC: This research was focused on grading practices in AP, and the post-secondary performance of students who participated in AP as compared with those who did not participate in AP. https://www.bccat.ca/pubs/ap_grading.pdf
- Post-Degree Programs in BC: Types of Post-Degree Programs and their growth in BC https://www.bccat.ca/pubs/post_degree_programs.pdf
- Admissions of High-School Non-Graduates: This examination of how public post-secondary institutions in BC provide high school non-graduates with opportunities to enter and participate in educational programs is important in assessing how well the current system is functioning. <https://www.bccat.ca/pubs/non-grads.pdf>
- Indigenous Educational Pathways: How to support and encourage Indigenous Educational Success. https://www.bccat.ca/pubs/indigenous_pathways.pdf
- International Transfer Credit Practices: How International credits are being assessed by institutions. https://www.bccat.ca/pubs/Intl_Transfer_Credit.pdf

Other projects:

- BC Transfer Guide – UBC has just released all transferable information regarding their courses, at present only available on UBC website, but BCCAT will be in touch with your institution to begin collaboration
- Survey of Mobile students: capturing the transfer experience of students, results will be available to the specific institution
- Credits to Completion: looking at how many credits students take for degree completion, and comparing that to transfer students. This is a measure of articulation and transfer efficiency; historically, it has been determined that students take about the same amount of credits
- Transfer Student Profile and Performance Report: how transfer students compare academically to non-transfer, has been studied for 30 years. Consistently found that transfer students has a lower high-school GPA, but post-secondary GPA is roughly the same. The performance of both populations in the SAME class is roughly the same, very robust finding
- Pending Articulation Requests
 - All attendees to review pending articulation requests in package and see what is causing the delay (could be many variables, institution level, evaluator level, BCCAT level)

- Flexible Pre-Majors
 - FPM is an agreement on a set of courses that all receiving institutions will accept in lieu of their own specific course requirements
 - A set of competencies and knowledge that students would need in the first two years of their area of study, obtained through a “package” of courses. Exists for Anthropology, Biology, Economics, English, Mathematics, Psychology, Sociology
 - There are benefits (agreements, structure, retention and planning, valuable discussions between discipline-based committees) and challenges (lack of awareness, maintenance and not a credential) of the flexible pre-major
 - Options moving forward: termination or support and continuation
- Student Transitions Project (STP): <https://www2.gov.bc.ca/gov/content/education-training/post-secondary-education/data-research/student-transitions-project>
 - The Student Transitions Project uses personal education numbers (PENs) to track B.C. student data across both K-12 and public post-secondary education systems. This information guides program planning and management to help students transition successfully to post-secondary education and graduate
 - 15 years of data linking BC K-12 data

Discussion point: Trend of admission averages (from high school) for students entering BIO and CHEM over last 9 years?

- Has increased, but not dramatically. Looking for other tools other than GPA, no discernable difference between admissible and non-admissible students
- Many pathways a student can take within the BC Educational system

Tracking Credit Data

- Can see how much learning (and it's worth) each student is receiving, however, not all institutions are captured as receivers (i.e. SFU, UVIC, UNBC, Royal Roads)
- Over 6 years, increasing amount of credits per student for Chemistry and Biology
- PEN number cannot track private institution activity nor students arriving from out of province, credit tracking resolves both of these problems

6. Chemistry VS. Biology Round Tables

- Each table to discuss a topic: choose your own topic!

7. Afternoon Business Sessions (Chemistry – Boardroom C408)

Call to order

1:35PM, Meeting Chair: Todd Whitcombe (UNBC)

8. Introduction, Regrets, Contact List updates

Regrets:

Jason De Costa (Selkirk College), Cynthia Broberg (Northern Lights College)

Contact List:

- Please update on Moodle if any changes
- If there are two alternating committee members for your institution, add both alternates onto Moodle to avoid missing anyone

9. Approval of the 2019 Agenda and 2018 Meeting Minutes

No changes required for the 2019 agenda

2019 agenda passed by consensus

Meeting minutes to be amended by Tamara Freeman, draft version available on BCCAT website:

<https://www.bccat.ca/pubs/2018-chem>

David Dick moved to adopt minutes with amendments

2018 minutes passed by consensus

10. Report from Chair and SLP

BCHEADset: British Columbia Higher Education Accountability Dataset

- Created to demonstrate accountability on the part of British Columbia's higher education institutions, and contains data on key measures of public interest
- <http://www.bcheadset.ca/>

Indigenization of Curriculum:

- To be congruent with high school systems

Report from BCCAT System Liaison, Margaret Heldman

- Please review Respectful Behavior at Articulation Meetings; found here: <https://www.bccat.ca/articulation/committees>

Okanagan Charter for Mental Health and Wellness

- Please take a look at Call to Action for post-secondary institutes and tips for supporting students: <https://healthpromotingcampuses.squarespace.com/okanagan-charter>

International Students

- Huge increase in recent years, mentioned in many individual institutional reports

11. Institutional Reports

Full reports are located on Moodle

Below are the highlights:

Alexander College – Marion Grob

- Moving to larger location in December in 2020 with new and upgraded chemistry lab, 18-30 classrooms, 2 lab sessions instead of 1
- More green labs, using less toxic chemicals
- New lab coordinator, more equipment per student, leading to positive student reviews
- Virtual Labs: We are running more labs, do other colleges make use of virtual labs? Lab Do-Overs: Do you allow students to make up labs if they miss them?
- Final Exams: Do students have to reach a certain percentage on exam to pass course?
- Lab/Equipment Expenditures: How much does your institution spend on labs/equipment?

BCIT – Jimmy Lowe

- Lower enrollment in mining and technology causing lower enrollment of chemistry courses
- Getting capital in order to complete renovations of classrooms and labs
- Looking to occupy student health building in the next 2-3 years

Camosun College – Neil Meanwell

- Enrollment is strong, low enrollment of physical chemistry however
- New Associate Dean of Arts and Science, new Organic Chemistry teacher as of June 2018
- New offerings: two-year Applied Chem/Biochem Program offering, Chem 11 equivalent offered, Chem 12 equivalent being developed, will not count as credits for degree program
- Hosting the C3 Conference May 24th, late registrants welcome
- Construction of new centre for health and wellness. Projected completion, late 2019. Health and Wellness will vacate building that they share with Chem

Capilano University – Urmila Deo Jangra

- Celebrating CapU 50th Anniversary – New campus annex at Lonsdale opening in 2019
- CHEM 101 required for Engineering transfer program, has increased numbers slightly
- Bachelor of Science – General degree request submitted to DQAB
- New 9 courses for 3rd and 4th year for students who are picking up general science credits, broader interest courses
- Chem will be taking over second year Biochem, Biochem teachers are now in Chem department
- General trend for students not to buy textbooks
- How to support international student success?

Coast Mountain College – Reto Riesen

- Terrace campus has more international students, attrition rate ~90% for international students. Less international enrollment for Rupert campus, more domestic students. How to support international student success?
- Very high population of First Nations students, mostly enrolled in Biology. Looking to Indigenize content, will look for chemistry examples with more local impact and relevance to local Indigenous groups. How do other institutions Indigenize content?

College of New Caledonia – Kara Crosina

- 6 campuses, serves 12% of BC. Prince George is main campus
- Many international students, many are in Chem 111 (100 students) to Chem 112 (33 students)
- Edco passed an Associates of Science Degree with concentration in Chem, resulting in more second year offerings, articulation requests pending for new offerings: Analytical (205) and Physical (201) in 2018-2019 Academic Year
- Faculty select lab partners from week to week, international students report that they are having more opportunities to integrate, new relationships are forming and academic dishonesty has been reduced

College of the Rockies – David Dick

- Domestic enrollment for Arts up, domestic enrollment for Science low. Enrollments for science courses are generally lower
- \$6 mil to be spent over next 3 years for program offerings
- \$18 mil student residence will be open for 96 students
- How is Engineering Chem set up at other institutions? 4 credit course or split up over 2 semesters, 2 credits each?

Columbia College – Taraneh Lajevardi

- Secondary enrollment increased significantly, more diversity in student body in secondary and UT programs
- Labs: 18 students per section
- Just completed DQAB organization review in 2019, lots of positive feedback

Coquitlam College – Sheenam Girdhar

- Steady enrollment in CHEM 101 and CHEM 102
- Students use Openstax, but mostly rely on instructor notes
- Using online assignments system, which students seem to love
- How to reduce course material being published on the internet?

Douglas College – Hanifa Jalali

- Enrollments are strong, all sections full with condensed and regular paced students, at maximum cap

of international students

- Hoping to do an annual review on how to support successful pass rates of international students
- Planning to renovate labs in New West campus over next 5 to 7 years
- Chemistry of Cooking is **very** popular but it does not transfer, students taking it out of interest, 4 hours of lecture, 4 hours of lab, 4 credit course

Kwantlen Polytechnic University – Patrick Duffy

- Enrollment is strong, partly due to international students, very high demand for Organic I
- Budget cutbacks caused loss of Minor in Medicinal Chemistry, and loss of one section in most course offerings
- Looking at Open textbooks for Chem 11 level course

Langara College – Kelly Sveinson

- Highest registration to date, international student percentage is ~50% with waitlists. This includes 2nd year courses, retention is high to second year
- Currently have more domestic students than ever
- New course - CHEM 1100: Chemistry of Cooking
- New Bioinformatics Degree approved by Ministry of Advanced Education
- 49 years on 49th Street celebration on June 16th
- 49 women in science scholarship has been set up to support women in STEM
- Textbooks: open source, even for 1st year courses. Does everyone use open source textbooks?

North Island College– Sherrie Wang

- Located in mid-part of island, serves Courtenay to Port Alberni and Campbell River. Courtenay is main campus. Port Hardy location has a new name now
- Enrollments in UT and 2nd year organic chemistry are very strong, even have a waitlist, opposite to last year
- However, lower enrollment for 1st year engineering chem. Math is the real issue for engineering students, however, as course load may be causing more than 50% failure rate. How to support student success in this regard?
- Equitable workload assignments proving to be challenging. What are student numbers in your classes?
- First year textbooks are expensive: \$400, and students do not even use them, looking for replacements

Northern Lights College - Cindy Broberg (regrets)

Okanagan College – Jasmine Korčok

- New course: Intro Chem for Viticulture
- International enrollment strong, mostly from India
- WHMIS training required for College, safety is ongoing concern
- Improvements made in first year labs to decrease waste in titration labs

QUEST – Emma Davy

- Everyone gets the same degree, Bachelor of Arts and Sciences
- All students take foundational courses, no majors, form a question in second year and use that question to guide their courses
- Hoping to hire teaching fellows to share with physical and life sciences. Current coverage by single block, visiting tutor
- New courses: Organic Chem 3 and Geochem/Forensic Geology
- Textbooks are acquired through Amazon

- No students have attempted to transfer, all transfer info made by registrar office. If you take a course elsewhere, you can get credit for it towards graduation

Selkirk College – Jason De Costa (regrets)

- Concern with enrollment numbers

Simon Fraser University – Evon Khor

- Enrollments are down 1.2%, only BPK is doing well enrollment-wise in Science
- Made changes to honours program, adding more upper division Chem courses instead of Physics
- Quantum Chemistry changed from 400 level course to 300 level course to increase accessibility

Thompson Rivers University – Bruno Cinel

- Seeking accreditation with Northwest Commission on Colleges and Universities
- Bachelor of Education STEM/Secondary program had its first intake
- Annual meeting with high school Chem teachers very well attended
- Strong participation in TRU CHEM 12 and 11 contest, 3300 registrants
- 17 TRU Chem graduates in 2019

Trinity Western University – Paul Brown

- Enrollment has increased considerably in last two years
- Chemistry Program and Accreditation reviews this year, 3 new hires this year
- Chem 101 revised to appeal more to non-majors (called Elementary Elements), waiting list at maximum cap of 60 students, very happy with response
- New course: Chemistry of Smell
- Continue to have visiting graduate students and post docs from France and Italy

University of BC: Okanagan – Tamara Freeman

- Numbers have held steady with strong waitlist
- New 400 seat lecture hall
- Significant drop in failure rates in last 3 years
- Grade discrepancy between two chemistry cohorts has decreased (one cohort has Chem 12, one does not)
- New Learnsmart program to teach critical thinking, time management and other skills
- Offering twinned experiments to decrease cheating and plagiarism, also more library-based teachings

University of BC Vancouver – Pierre Kennepohl

- If a student does not have Chem 11 and 12, they take basic skills test, which tests skills from Chem 11
- New course: Chem 100 – Chem 11 and 12 together. Chem 111 allows those with no pre-reqs to funnel into the main stream, only for those who fail basic skills test. Success rates of this bimodal system were high and were hitting expected targets
- 2nd year enrollment in Chem are quite steady
- Combined Major Chemical Biology: increasing popularity, initiated program because losing students to Biochem
- Articulation Ticketing system used to make decisions on articulation requests, Pierre apologizes for current delay in response

University of Northern BC – Todd Whitcombe

- Currently troubleshooting in-term attrition but still has 33% failure rate
- Studying enrollment numbers by splitting lecture components and lab components
- Looking to hire a term-lecturer for Analytic Chem, Inorganic Chem for next 3 years
- Underwent external review in Sept 2017, currently undergoing major internal restructuring which

- will see 5 faculties, Chem will be under Faculty of Science and Engineering
- Students really liked on-line organic chemistry textbook, which is about \$50

University of the Fraser Valley – David Fenske (Regrets)

University of Victoria – Violeta Iosub

- Just finalized a curriculum review which will be implemented starting Sept 2019, flowcharts available to support students going through the transition, or in the middle of it
- Removed lab components of 232 and 222, and introduced new integrated lab course 260 and removed 213

Vancouver Community College – Judith Wallace

- Enrollment has slightly decreased, but holding steady, same number of sections
- New: 1st year UT Engineering Certificate and 1st year UT program in Environmental studies
- Thank all articulation committees for organic chem articulation decisions and support
- College will be announcing their decisions regarding Associates degrees soon

Vancouver Island University – Jessie Key

- New Chem major accepted, approved by the Ministry of Advanced Education in July 2018
- Moved into new Health and Science building in September 2018, has dramatically improved available lab space
- New courses: 432, 441, 341, 351 and renumbering two courses
- Textbooks have remained the same, open textbooks for 1st year, surveyed first year students and they are happy with it
- Have increased recruitment for new students, including at high schools

Yukon College – Ernie Prokopchuk

- Increased staffing by 50%, Ernie is the new Chair of Science
- Yukon College will become Yukon University in May 2020
- Planning for new science building with federal government funding: \$26 mil over 5 years
- 3rd year of all open access textbooks, also available in library as physical textbooks, uptake is low for physical textbooks
- Does your institution give 1st year credit for AP Chem 12?

12. New Business and Open Discussion (Workload Distribution, Class Size, Demographics)

12.1 New Chair

- Todd Whitcombe's 2-year tenure is concluding; Thank you to Todd Whitcombe for all of his hard work
- Todd Whitcombe nominates Todd Stuckless as new chair, nomination seconded by Sherrie Wang

Nomination passed by consensus

12.2 Joint Articulation

Q: Thoughts on Joint Articulation, this year's Joint Articulation with Biology and Chemistry was a success, meet with Physicists next year as well?

- Would like to meet with Biology again next year
- Would like to meet with Physics as well, but Physicists normally meet first week of May and may be combined with Engineering
- Depends if other committees have already decided on host and date
- Vote: May 8th or May 1st? May 1st is too early, May 8th is a good tentative date
- Todd Stuckless to speak to Tara Stehelin, and committees of Physics and Environmental Science

group

12.3 Workload Distribution, Class Size

- When teaching double sections, does it count as one? Sometimes class size discrepancy is 4 times from smallest to largest section
- Motion to appoint Sherrie Wang as head of sub-committee to determine standard workload for Chem instructor, she will be contacting committee members through Moodle

Motion passed by consensus

12.4 Demographics

- Todd Stuckless noted that numbers of students will decrease as people have less children
- Todd Whitcombe stated that birth rates are increasing in Prince George, hopefully same boom occurs for rest of province

13. Future Meetings

- 2020 College of the Rockies – May 1st or 8th, to be decided by end of June

14. Adjournment (Moved by Jimmy Lowe / seconded by Urmila Deo Jangra)

5:30 pm

DRAFT