ABE Science Articulation 2020

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October 22-23, 2020

Minutes by Christine Miller, TRU and Stephanie Boychuk, VIU

ABE Science General Articulation Meeting, October 23rd, 2020

Attendance

Name	Institution	Email	Subcommittee
Arthur Bakx	Okanagan College	abakx@okanagan.bc.ca	Chemistry, Physics
Barnabe Assogba	KPU	dossou.assogba@kpu.ca	Biology
Christine Miller	TRU	cmiller@tru.ca	Biology, General Science
Derek Knox	TRU-OL	dknox@tru.ca	All subcommittees
Dino Gigliotti	CNC	gigliottid1@cnc.bc.ca	Chemistry and Physics
Ellen Turone	VCC	eturone@vcc.ca	Biology, Physics, General Science
Ellie Knight	Selkirk College	eknight@selkirk.ca	Chemistry, Biology
Fiona McQuarrie	BCCAT	fiona.mcquarrie@bccat.ca	
Greg Colombo	VCC	gcolombo@vcc.ca	Biology
Greg St.Hilaire	UFV	Greg.sthilaire@ufv.ca	Biology, Chair
Jeanette Landry	Northern Lights College	jlandry@nlc.bc.ca	All subcommittees
Jessica Morcom	OC	jmorcom@okanagan.bc.ca	Biology and General Science
Jimmy Lowe	BCIT	jlowe@bcit.ca	Chemistry
Judith Wallace	VCC	juwallace@vcc.ca	Chemistry
Lisa Lewis	Vancouver Island University	lisa.lewis@viu.ca	Chemistry
Michele Jones	NIC	michele.jones@nic.bc.ca	Biology
Michelle Gunness	Capilano University	mgunness@capilanou.ca	Biology
Neil Meanwell	Camosun	meanwen@camosun.bc.ca	chemistry
Raji Balagopal	University of the Fraser Valley	raji.balagopal@ufv.ca	Chemistry and Physics
Richard Brand	Capilano University	thomasb@capilanou.ca	Physics and General Science
Sherrie Wang	NIC	Sherrie.wang@nic.bc.ca	Chemistry
Stella Webster	CMTN	swebster@coastmountaincollege.ca	All subcommittees
Stephanie Boychuk	Vancouver Island University	Stephanie.Boychuk@viu.ca	Biology
Stephanie Ingraham	Camosun	IngrahamS@camosun.bc.ca	Physics
Steve Cheung	Vancouver Island University	Steve.Cheung@viu.ca	Physics
Terry Berg	KPU	terry.berg@kpu.ca	Physics
Tom McBee	Yukon University	tmcbee@yukonu.ca	Chemistry and Physics

Welcome/Introductions

Territorial Acknowledgement

Presentation by Dr. Fiona McQuarrie BCCAT

- This year the work has gone forward in an unusual way because of the restrictions due to COVID-19
- Some groups are meeting more often to collaborate/commiserate
- BCCAT are all working from home, this has been an adjustment
- JAM is Nov 4-5 and its online. This is a good thing, so now we don't have to restrict attendance – anyone in post-secondary could come. There is a session on conducting effective articulation meetings online. We are all invited. Registration is on the BCCAT website. You can attend all or a portion.
    - Keynote address on micro-credentials
    - New transfer credit system, upgrades, new functions
- Please refer to the Fall Update for more information

Presentation by Lisa Lewis ABE Steering Committee Co-chair

- Working and doing our best during these times, thank you for getting the business of articulation done
- Steering committee didn't happen all the way last year. Didn't have a proper meeting due to the online pivot, so no proper report
- Suspects that we will be asked to meet remotely from here on out since it is a big savings. We are doing it now to gather the initial feelings of people. It's important to hear what experienced people can report on what the loss is of meeting in person; new members won't be able to make that same type of comparison if they've only every participated in articulation online. What are the thoughts on that:
    - Concerns around attendance and quorum, concerns about less opportunity for connect with colleagues, zoom burnout/fatigue, the ministry gives money for articulation meetings – will this just be clawed back and end up not being a saving? What are other meetings doing? We only worked this well together virtually this year,

but possibly only because we know each other well already from past face-to-face articulation. According to community of inquiry theory being together is critical. Online meetings can lead to worse communication. Networking, mentorship don't happen as well in online meetings – no breakout rooms, only 1 speaker at a time. We may have trouble getting people to sit on the committees. Technology challenges and security. Goes against the spirit of articulation. Less conversation. Much easier to chair when in person.There is a limitation to what you can do with the technology that in person provides when doing collaborative work. It is difficult working with people when you can't really read body language, posture, etc. Need to keep in mind the costs associated with online meetings. There was inefficiency getting quorum.

- One person said they liked the zoom meetings. If she had to drive, she wouldn't have attended the main meeting. Another person said we should give it a try and see if we can improve this system to make it better. We've got a year to figure out what tech tools could help us with our work.

Call to Order

Motion to accept the October 2020 agenda
Mover: Lisa Lewis
Seconder: Barnaby
Motion carried

Motion to accept the minutes from 2019
Mover: Jessica Morcom
Seconder: Greg Colombo
Motion Carried

Summary of Institutions

Arthur Bakx - OC
Teachers chemistry and biology, sometimes math and physics. We've switched to complete online. There are some classes with face to face at OC, but none of the upgrading courses. The lab component is missing; in his opinion it is a loss. There is a learning curve with respect to online content delivery. Faculty and students are all learning. For some students it works, but we are also losing a number of students that in a normal classroom setting we would have been able to

connect with. We have lost much personal connection, one-to-one support. We are grateful to still have employment, students can still access education, but is it the same quality? No. Class sizes have increased due to amalgamation of sections across campuses. It is harder to help the students that really need it.

Christine Miller – TRU

All ABE classes are online, including labs. There is quite the learning curve for both students and faculty. There are much higher attrition rates this semester due to the shift in delivery. Students in ABE are an at-risk population and virtual delivery makes it that much harder to support them. Our students are also much more likely to have unsatisfactory home situations and/or learning tools (laptops, wifi, etc.). It has been very difficult to connect students to normal campus services; but all faculty are trying their best.

Derek Knox – TRU-OL

Had to switch to online. OL didn't have a hard time, but we have a legacy of the Open Learning Agency. Derek teachers math 10 and 11, and physics 11 and 12. There is a doubling in the numbers of students. Interestingly, students are actually working on the course. In the past there was a high rate of attrition, low completion rates. At this point, over 60% are actually in right away, progressing in the course. Most students are local. Advanced physics was updated 2 years ago. Would like to see physics 12 updated. Were using ProctorU, but are now basing marks in lieu of exam of the assignments done. Getting excellent support. Director does a podcast every Thursday which is very positive. Everyone is putting in hours and hours of work to make this all possible.

Neil Meanwell – Camosun

All online in the Chemistry department. Currently all online. The higher the level of chemistry, the harder it is to do equivalents online. It's a lot of work to do online lectures and they are not really working as well. Teaching synchronously. It's a lot more work than what we'd be doing ordinarily. Difficulty connecting with at-risk students.

Dino Gigliotti – CNC

All lectures are online. Labs are done face to face, but instructors can opt to do remote delivery should they choose. A mix is nice in case students can't make it to campus or they prefer learning independently.

Barnabe Assogba – KPU/UFV

Teaches biology. They are trying to fit into a new department. All courses online including the labs. Using Connect Virtual Labs from McGraw Hill. This costs about $120 – the labs are gamified. Most students are doing well. Lots of them aren't used to learning online, and some struggle and/or withdraw. He recommends that people struggling with the lab – McGraw Hill gives you a 2 week trial to try out before you subscribe. Does not love the remote teaching. He still has lots of energy that he is not deploying in class.

Terry Berg – KPU

Is interested in doing at home labs with the technology students already have. Some topics are easy to do at home, but others its just not possible. Students are working multiple jobs and in a class with 50 students, maybe only 10 come to the live lectures. Moodle was limiting, ended up trying out teams.

Elllen Turone – VCC

Math and Science for self-paced. Increased enrollment. They have a wait list. Some say they miss face to face, but most are happy with the online delivery. Labs – they either buy online subscriptions. Some are recorded labs done by the instructors. Instructors are overworked, some working 6 or 7 days a week, yet don't want to refuse work. There have been layoffs at the institution. We're not interacting with students in the way we like and missing it. Invigilation has been an issue. Hoping to open up invigilation rooms again so instructors can get back to teaching and not worrying about academic integrity.

Ellie Knight – Selkirk

Teachers Math Biology Chemistry. Enrollments are stable. Working students like the online format. It has been tough for marginalized students. Every instructor (due to lots of satellite campuses). Reduced classload, but increase in students. Trying to reach out to students who are falling behind. Some students are doing really well with the technology assisted learning.

Greg Colombo – VCC

Teaches biology and maths. Sometimes does chemistry. Ditto to the comments about struggles with online labs. The feedback on the online teaching of math has been good, but biology has been more of a struggle. Can't read the room, get a feel for how students are getting the concepts.

Have no tools to ensure academic integrity and is concerned about that. Tried to implement lockdown browser and the feedback was it was very difficult for students. Trying and failing is an important part of lab skills and we don't get this with online or virtual labs.

Jeanette Landry – Northern Lights College

Got some labs back for biology and chemistry. Still have online labs for general science and physics. Wasn't too much of a shift since they already offered online courses. Lower level classes enrollments are down. Will have in-person finals in June and January. Using the lockdown browser, but there are lots of issues with it. Some instructors like working from home and others don't. Teaching online is a good stop-gap but wouldn't want to do it forever.

Jessica Morcom – OC

Echoes Arthur's comments. Can tell students are feeling pressured in class, they aren't speaking up, for lower level students it can be really difficult. It is taking longer to find weaknesses and address them. The strong students are doing really well – it is fitting their schedules.

Jimmy Lowe – BCIT

Have a mix of things – some programs are completely remote while others are doing blended learning. Still have limited labs because of social distancing. Some issues coming up are: The amount of screen time people are logging in (teachers and students). Has drafted an e-learning committee and the teaching/learning centre subscribed to magna

Lisa Lewis – VIU

People are doing interesting work. Steve is doing amazing physics labs online. Have applied to have the literacy courses blended for the next semester. Didn't think the labs would have passed. Not teaching this semester.

Michele Jones - NIC

Completely online. Using the McGraw Hlil Connect – expense but a good program. Augmented with additional activities. The workload is large. Students often don't attend live lecture. They go and listen to the recordings but don't get as much out of it.

Michelle Gunness – CapU

In ABE the classes are fully remote delivery, with the exception of one course on a small campus. Enrollment is high, engagement is low – but with variability. Tries to make contact, losing opportunity for connection. Finding more than usual students are taking on more – some are overloaded between courses and work which can be overwhelming for them.

Raji Balagopal – UFV/VCC

Teaches Physics and Chemistry. Offering completely online. Uses Blackboard to deliver at UFC. Uses moodle at VCC. Takes videos of labs, also using simulations. Students wish they were having the in-person lab experience.

Richard Brand – CapU

Full classes, flexible, asynchronous selfpaced model. There are cost barriers for students working online. It's really difficult typing out math equations. A pen based computer is super expensive – the cheapest option is $500 for the cheapest options. If we are to truly have online interactions the students need the appropriate technology and that is a cost barrier. At the beginning of term they had used a new upgrade of moodle and it didn't work at all for the first week of classes across the whole institution.

Sherrie Wang – NIC

Teaches Chemistry. All chem labs face-to-face, students in small groups (1/2 wet lab, 1/2 dry lab weekly). Students needed a lot of support with dry labs. Facing lay-offs, 1/3 faculty gone due to budgets, combining classes and having remaining faculty teach multiple sections.

Stella Webster – Coast Mountain College

Teaches sll Sciences and Maths. 50% enrollment drop, faculty paired down and no replacement of retirements. 7 folks teaching upgrading – 2 in Science. Using Brightspace and Bluejeans Asynchronous teaching with occasionally synchronous sessions. Labs – not approved for face-to-face this semester or next. Has been given some release time to work on creation of virtual labs

Stephanie Boychuk – VIU

Students struggling with technology access, library has some spaces and borrowing options. VIU has Brightspace, streaming media (Kaltura), Zoom, and blogs – lots of tools before pivot. Faculty

creating innovative online labs, using project based learning as authentic assessment and for academic integrity. VIU has disallowed proctoring software.

Steve Cheung – VIU
Teaches physics and math, using projector. Teaching continuous intake and having good attendance. Using GeoGebra (computer algebra system) to get students to gather data and use software. Have students using online interactives together in synchronous classes. Labs – creating instruments for students and demonstrations, found force sensors and other tools

Tom McBee – Yukon College
Have used combination of Smartboards and Zoom for teaching math. Recording notes and lectures for students. Issues with scrolling and screen action during lectures. Library has bookable rooms for students, but do not allow kids – some students sitting in cars in parking lot to access wifi and classes. Advanced math students are struggling. Developed lab kits – physics (~$100) and chem (~$175) with similar experiments to what would be face-to-face. Potential for group to get together to develop lab kits?

Judith Wallace – VCC
Numbers are slightly down at VCC. Increase in attrition in Spring and Fall. Likely will not have long-term or permanent shifts to delivery or employment

Greg St. Hilaire - UFV
Using McGraw-Hill Connect for labs. Have waitlists, end of semester will have better data on how it is going.

Discussion of online teaching

- Question: Should we articulate online and face-to-face labs separately?
    - Should we require a minimum number of labs to be face-to-face?
    - When we say “face-to-face” would kitchen / kits labs count? – disagreement
    - Unclear whether receiving universities are aware of/notice/care about lab delivery method, in at least one case it is not possible to designated courses separately
- Most agree that during the pandemic we should allow flexibility in delivery

- Discussion on the differences between lab and lecture skills, skills gaps can result from budget issues as well as poorly designed online experiences, potential that online labs give students other 21st century skills that may be needed in workplace
- Discussion on the importance of data gathering for the process of doing Science, a few claim this is not possible with current online labs, whereas other say some well-designed online labs do allow for data gathering (simulations, phone apps, etc.). Point raised that students do not gather their own data in every face-to-face labs.
- Many agree that instructors use professional judgement on how best to ensure students meet learning outcomes, labs are not separate. Local context, students, and opportunities should be able to be leveraged without fear course will not be articulated.
- Importance of accessibility for our student population. Some shared students in community may not be able to take labs online due to connectivity, others shared students in some situations may not be able to attend face-to-face. Further discussed that online labs allow some students to learn in home communities. Issue of expense of publisher lab packages may present a barrier to some students.
- General agreement that the discussion will need to continue in future Science Articulation meetings and that online labs will possibly be the only option for some institutions for some time while the COVID-19 pandemic is present.

Chemistry Subcommittee Meeting, October 22nd, 2020

Attendance

Jennifer Wolf	British Columbia Institute of Technology
Richard Brand	Capilano University
Stella Webster	Coast Mountain College
Dani Michael-Didier	College of New Caledonia
Sherrie Wang	North Island College
Jeanette Landry	Northern Lights College
Arthur Bakx	Okanagan University
Ellie Knight	Selkirk College

Tory Anchikoski	Thompson Rivers University
Derek Knox	Thompson Rivers University-OL
Raji Balagopal	University of the Fraser Valley
Greg Colombo	Vancouver Community College
Judith Wallace	Vancouver Community College
Lisa Lewis	Vancouver Island University

Changes to the Grid

In order to alleviate concerns that the order of the optional topics in the core topics related to their importance, it was decided that options be listed alphabetically. Only Provincial Chemistry needs to be change and should read:

Options

Options may include: biochemistry, environmental ethics, industrial applications, organic functional groups, nuclear chemistry, and thermochemistry.

Articulation

The following courses were approved for inclusion on the grid as Advanced Chemistry:

Capilano University BCHM 043 & BCHM 044
Northern Lights College CHEM 040
Okanagan College CHEM 011
Selkirk College CHEM 50
Vancouver Island University CHEM 047

The following courses were conditionally approved for inclusion on the grid as Advanced Chemistry pending the Chemistry Sub-Committee chair receiving required edits to the official outline by April 1, 2021:

College of New Caledonia CHEM 045
North Island College CHEM 051
Thompson Rivers University CHEM 0500
Thompson Rivers University-Open Learning Agency CHEM 0501
University of the Fraser Valley CHEM 083
Vancouver Community College CHEM 0861 & 0871

Yukon University CHEM 050

These institutions are asked to ensure that their outlines:
Refer to the 2020-21 guide
Put in the link to ABE articulation guide https://www.bctransferguide.ca/search/abe
If the Learning Outcomes have been cut and pasted ensure the third bullet under
B. Properties of Substances reads "Describe early atomic theory and related laws"

The following institutions have courses on the grid but did not send a representative or an outline. They will we reminded that they must send a representative and outline next year or risk removal from the grid:
Camosun College CHEMISTRY 070
Coast Mountain College CHEM 040 or CHEM 0401 & 0402
College of the Rockies CHEM 080
Kwantlen Polytechnic University CHEQ 1094
Native Education College CHEM 061 & CHEM 071
Nicola Valley Institute of Technology CHEM 050

Election of Chair

Ellie Knight of Selkirk College was acclaimed the new sub-committee chair. Tom McBee will follow through with the details of this year's meeting until May 2021.

General Science Subcommittee Meeting, October 22nd, 2020

Attendees

Jessica Morcom - OC
Eleen Turone - VCC
Christine Miller - TRU
Jeanette Landry - NLC
Richard Brand - Capilano

Greg Columbo - VCC

Approval of Agenda

Mover: Christine Miller, TRU
Seconder: Greg Columbo, VCC
Motion carried

Approval of minutes from 2019 meeting

Mover: Christine Miller, TRU
Seconder: Greg Columbo, VCC
Motion Carried

Articulation business from 2019.

TRU made required changes before April 1, 2019 and so the status of SINC 0500 is now approved.
VCC made required changes before April 1, 2019 and so the status of SCIE 0751 is now approved.

This course is to be removed from the grid.
VCC SCI 051

New articulation business

Course number change TRU SINC 0400 changed to SINC 0440. Grid should now show SINC 0440 not SINC 0400.

Review of the 2020/21 Articulation Handbook

No changes

Other Business

None

Motion to Adjourn

Mover: Christine Miller, TRU
Seconder: Greg Columbo, VCC
Motion Carried

Physics Subcommittee Meeting , October 22nd, 2020

Attendees:

Tom McBee, YK
Derek Knox, TRU-OL
Steve Cheung, VIU
Richard Brand, Capilano
Ellen Turone, VCC
Terry Berg, KPU
Dino Gigliotti, CNC
Jeanette Landry, NLC
Raji Balagopal, UFV

Approval of Agenda

Mover: Derek Knox, TRU-OL
Seconder: Terry Berg, KPU

Approval of minutes from 2019 meeting

Mover: Tom McBee, YK
Seconder: Derek Knox, TRU-OL

Business Arising

NVIT did not submit an outline for articulation again this year. NVIT needs to be alerted that they must present any physics outline they want to remain articulated at next articulation. The physics sub-committee chair will draft a letter to that effect.
ABE physics courses required to re-articulate this year to remain on the articulation grid.
NVIT PHYS 050 Chair will contact rep requesting outline for articulation
KPU PHYQ 1098 Conditional acceptance if dated link added by April 1/21

Articulation Business From 2019

UFV made required changes before April 1, 2019 and so the status of PHYS 083 is now approved.

New Articulation Business

None

Review of the 2020/21 Articulation Handbook

a) In advanced level physics, the core topic "Waves and Optics" contains the bullet:
"Analyze and solve problems involving wave phenomena including refection, total internal reflection. "
Based on the 2018 physics sub-committee minutes this should read:
"Analyze and solve problems involving wave phenomena including **refraction**, refection, total internal reflection. "

b) Discussion of other changes.
Add astronomy as an option to provincial physics.
Make options alphabetical in provincial physics.

Other Business

None

Adjournment

Mover: Derek Knox, TRU-OL
Seconded: Raji Balagopal, UFV

Biology Subcommittee Meeting, October 22nd, 2020

Attendance

Christine Miller - TRU
Annie-Claude Letendre - Yukon
Stephanie Boychuk – VIU
Michelle Gunness – Cap U
Ellen Turone – VCC
Barnabe Assogba – KPU
Derek Knox - TRU-OL
Michele Jones – NIC
Ellie Knight - Selkirk College
Jeanette Landry - Northern Lights College
Greg Colombo – VCC
Jessica Morcom – OC
Greg St. Hilaire – UFV
Michelle Jones – NIC

Presentation of Human Biology Open Textbook by Christine Miller – TRU

Textbook can be found at: https://humanbiology.pressbooks.tru.ca/front-matter/introduction/
Highlights included: cultural connections and Indigenous connections, interactive review questions in H5P, pop up glossary, case studies and an explore more section with video links

Update to Outcomes for Provincial Biology

Please see attached amended articulation guide, changes starting on page 156 and ending on page 160.
Motion: Jeanette Landry
Seconder: Barnabe Assogba
Motion carried

Business Arising

1.The following institutions have made minor changes in Advanced Biology and are now on the grid:
Selkirk College – BIOL 50 (Advanced, update link to ABE Handbook)
TRU-OL – BIOL 0501 (Advanced, include reference to a minimum of seven labs in the course outline)
Vancouver Island University – BIOL 047 (Articulation, ensure link is clickable, ensure that learning outcomes are copy and pasted correctly)

2. The following institutions still have conditional acceptance status in Advanced Biology and once they fulfill the requirements can email jmorcom@okanagan.bc.ca for acceptance.
Okanagan College – BIO 011 (Advanced, pending approval from EdCo)
Vancouver Community College – BIO 0861 & BIO 0871 (Advanced, ensure course outline includes an explicit reference to a minimum of seven labs)
College of the Rockies – BIO 045 (Advanced, update link and learning outcomes, maintain reference to seven labs)
Mover: Greg St. Hilaire
Seconder: Barnabe Assogba
Motion carried

On the Biology Transfer Guide (page 45), the course codes for NLC are incorrect. They should read BIOL 040 and BIOL 050, not BIO 040 and BIO 050.
Vancouver Island University course code changes – BIO 047 to BIOL 047 and BIO 067 to BIOL 067
Mover: Greg St. Hilaire
Seconder: Stephanie Boychuk
Motion carried