THE BRITISH COLUMBIA COMMITTEE ON THE UNDERGRADUATE PROGRAM IN MATHEMATICS AND STATISTICS

Minutes of the 102nd Meeting, May 14-15, 2024

Douglas College, New Westminster Campus, British Columbia

(in person and online)

TUESDAY, MAY 14, 2024

1. Welcome and Opening Remarks (9:00)

1.1 Welcome from the Host Institution

Brian Chapell, Dean of Science and Technology, welcomed everyone to the 102nd meeting of the BCcupms, at Douglas College. This included a territorial acknowledgement that Douglas College is located on the unceded traditional territories of the Coast Salish Peoples including the territories of the of the qʔíc̓əy̓ (Katzie), qʼʷaːnƛ̓ʼən̓ (Kwantlen), kʷikʷəƛ̓əm (Kwikwetlem), xʷməθkʷəy̓əm (Musqueam), and qiqéyt (Qayqayt) First Nations.

Plenary Session #1

2. Adoption of Agenda

Motion (Brian Wetton, UBC Vancouver): That the agenda, as provided, for the 102nd meeting be approved. Seconded (Dean Slonowsky, VIU). **Approved by consensus.**

3. Approval of Minutes of 101st Meeting held at UFV, May 16-17, 2023

Motion (Brian Wetton, UBC Vancouver): That the minutes for the 101st meeting be approved with the following amendments:

-pg. 10, *Capilano University* has a program for lending graphing calculators

-pg. 13, very bottom, change Jane Butterfield to out-going *vice-chair*

Seconded by Costa Karavas (VCC and UCW). **Approved by consensus.**

4. Announcements:

4.1 Introduction of Representatives

Chair invited all Zoom participants to introduce themselves, followed by in-person attendees around the table.

4.2 Notice of elections:

At this meeting, election for the Chair of the BCcupms will be held. This position has a two-year term. A nominating committee was formed: Patrick Montgomery (Camosun), Andrea Hyde (College of the Rockies) and Ana Culibrk (Columbia College). The nominating committee will report during the next day's session on their findings/nominees.

There was some discussion about whether the length of a term should be extended, but the consensus was that, no, it will be kept as a two-year term.

4.3 Conferences

(Natasha Davidson, Douglas College): Sharing Math is on at Douglas College this Thursday following the BCcupms meeting, and is in memory of Jim Totten.

(Susan Oesterle, Douglas College): Changing the Culture is this Friday at SFU.

(Susan Oesterle, Douglas College): Canadian Mathematics Education Study Group is at Laval University, Quebec City, May 31 – June 4.

The meeting was proceeding well ahead of schedule, so there was some discussion about how to use the extra time, resulting in the following motion.

Motion (Deanna Baxter, Chair): To break item 7 (Institutional Reports Highlights) of the agenda into two parts. Part 1 to be started immediately and end at the scheduled break at 10:15am, and Part 2 to take place during the original planned time in the agenda. Seconded by Natasha Davidson (Douglas College). **Approved by consensus.**

Highlights of Institutional Reports, Part 1 (appended to the minutes below):

Institutions outlined highlights from their reports relating to enrolment, new programs or courses, new hires and retirements, and the use of Open Education Resources.

Keynote Presentation – Veselin Jungic, SFU 10:30 AM

In his presentation, titled "Two-Eyed Seeing: Mathematics and Indigenous Traditions and Cultures," Dr. Jungic shared his experiences and what he has learned over the past many years travelling to and cooperating with various indigenous communities and their elders. His talk centered around definitions of what it means to "do" mathematics and the different forms this takes in contemporary and traditional art, education, and daily life in indigenous communities.

Plenary Session #2 1:10 PM

5. Reports:

5.1 BCCAT – Rob Fleming, Executive Director, BCCAT

Highlights of the presentation:

- The BCCAT spring update is available at available on website: https://www.bccat.ca/pubs/Resources/ACUpdate202404.pdf
- There are 2 important new or revised documents available:
    - "How to Articulate handbook": https://www.bccat.ca/resources/HowToArticulate2023.pdf
    - "Articulation Committee Guide": https://www.bccat.ca/resources/ArticulationCommitteeGuide2023.pdf
- It is the 35th anniversary of BCCAT.
- This year's Joint Annual Meeting (JAM) will take place in hybrid format, on Friday Nov 8, at Paradox Hotel, Vancouver: https://www.bccat.ca/articulation/jam/
- The deadline for the BCCAT Transfer award nominations is August 31. These awards are to recognize individuals or groups that have demonstrated exemplary leadership through activities that have made a significant and valuable contribution to the transfer community.
- BCCAT has a number of recent research articles published, including:
    - "Accessible Admissions" which summarizes the results of a review of post-secondary institutions' admission processes and presents best practices and opportunities to advance equity, diversity, inclusion and decolonization supports in post-secondary admission policies and practices. https://www.bccat.ca/publication/accessibleadmissions/
    - "Professional Regulation" which explores the impact of professional regulation on transfer in BC: https://www.bccat.ca/publication/professionalregulation/
    - "Course Outlines in the BC Transfer System" a report that examines and compares courses outlines at BCCAT member institutions and provides recommendations for course outline content to facilitate transfer credit. https://www.bccat.ca/publication/CourseOutlines/

- Institutions across Canada and many public US institutions are now included in the BC Transfer Guide
- A current project is examining how both sending and receiving institutions manage letters of permission (LOPs) for transfer credit. These are letters that outline an agreement to take a course at a different institution and bring it back to obtain transfer credit.
- Another large ongoing project is the BC Transfer Students Profile and Performance report (done every 5 years). This tracks student mobility across the province and is a rich resource of information available on the public site. There is also a back end available through institutions. However, it only tracks students who have a PEN. The report will be coming out in the Fall, looking at performance and success of transfer students. Over the years it has shown that standards are very well aligned across our institutions, as there was essentially no difference in performance based on transfer vs. direct students.

- Western Community College was approved as a member of the BC Transfer system, as of a couple of weeks ago.
- BCCAT is planning to hook up their database of transfer agreements to the Education Planner BC initiative. This is a suite of services for workers returning to education.
- Deanna Baxter (Chair) asked if there could be funding from BCCAT available for the BCcupms webpage. Rob Fleming indicated that he would look into it.

5.2 BCcampus Open education – Arianna Cheveldave, Coordinator, BC Campus Open Education

Highlights of the presentation:

- Arianna promoted their BC Open Collection. These are open education libraries and course packs. There is a new website: https://collection.bccampus.ca/
- BCcampus has launched an Open Education Support Community. The community meets once a month on zoom to discuss open education in BC and the Yukon. Meeting dates and registration links can be found in the BCcampus calendar: https://bccampus.ca/calendar-3/
- They offer an OER Production Series. This is a five webinar series on finding OER, using Pressbooks and making accessible educational resources.
- The BCcampus Regional Roadshow is taking place June 10-18, 2024. They are travelling to several institutions (Okanagan College, Thompson Rivers University and Selkirk College) and offering various workshops and sessions.

5.3 PIMS – David Leeming (report included in Supplemental Reports below)

Highlights of the presentation:

- David provided us with some history of the PIMS Education Associates program. It is a program designed to provide non-PIMS institutions with up to $500 for outreach activities.
- David provided many highlights from reports of this year's recipients, including
    - Camosun College hosted 2 outreach events: Math Challengers and Science Rendez-Vous.
    - Coast Mountain College: hosted the BC secondary school math contest.
    - Langara College: hosted the Vancouver district science fair for 10th successive year, and also the American math contest series.
    - Okanagan College: hosted Math Challengers (70 students) & Kangaroo Math (50 students)
    - Thompson Rivers University: hosted the final round of the BC Secondary math contests (60 students)
    - Vancouver Island University: hosted the BC secondary school math competition and some math demonstrations

- There was a total of 1259 students involved in math activities for these various PIMS supported outreach activities.
- Please reach out to David Leeming or Melania Alvarez if your institution is interested in applying for funding for Math outreach activities through the PIMS Education Associates program.

5.4 Adult Basic Education – Costa Karavas (Vancouver Community College) (report included in Supplemental Reports below)

Highlights of the presentation:

- Costa summarized the purpose and goals of the discipline-specific Adult Basic Education working groups. These working groups function as articulation committees for their discipline and report to the ABE Steering Articulation Committee.
- There is an ABE Articulation Handbook published annually by the Ministry of Post-Secondary Education and Future Skills, available on the BCCAT website.
- The Adult Upgrading Grant (AUG) for low-income students supported over 2400 students.
- Recent data analysis by the Ministry suggests that AUG recipients are entering post-secondary programs in areas of high labour market demand.

Questions/Discussion:

(Deanna Baxter, Capilano University) : It seems there is overlap between ABE pre-calc and University 0xx level pre-calc. What is the difference and where is the line between them?

(Costa Karavas, VCC): Good question, this is why many institutions have an ABE program – to fill the gaps. There are similar learning outcomes to pre-calculus, but there are differences in the number of contact hours, rigour, scholarship eligibility, and transfer credit availability.

(Eugene Belchev, Langara College): How old should an “adult” student be? What is the age requirement and is it open to international students.

(Costa Karavas, VCC):The minimum age is 15, and there is no upper age limit. International students must pay tuition, but for domestic students ABE is tuition-free.

(Ben Vanderlei, University of the Fraser Valley): We struggle with the distinction/grey area between precalculus at high school and university level when articulating courses from international students especially (is it 1xx, or 0xx, etc?).

(Costa Karavas, VCC): The ABE courses have 3 levels: intermediate, advanced, and provincial.

Due to time constraints and general continuing interest, the Chair (Deanna Baxter, Capilano University) suggested that this discussion be continued during the Math parallel session.

5.5 Changing the Culture (Friday, May 17, 2024) Malgorzata Dubiel

- The Changing the Culture conference, funded by PIMS, was started in 1998, and will occur for the 27th time this Friday, May 17th.
- This is only the second time since the COVID-19 pandemic that the conference is back in person. Over 100 participants have registered so far.
- This year's general theme is "Artificial Intelligence and Math Education."
- You can access that conference information at: https://www.pims.math.ca/educational/changing-culture
- Malgorzata will be stepping back from organizing the conference in the future and Jamie Mulholland (SFU) will be taking over the task for future years.

Questions/Discussion:

(Deanna Baxter, Capilano University) thanked Malgorzata for all her work on the conference over the past years.

(Costa Karavas, VCC and UCW): There was an interest in the past in changing the name of the conference. Is that still be considered?

(Malgorzata Dubiel, SFU): It was decided there were still valid reasons to keep this name, but the question will be passed on to Jamie Mulholland. The main goal of the conference is that it is a platform for a wide range of attendees (elementary teachers, high school, ministry reps, post-secondary instructors, grad students, etc.) and the name should reflect this.

6. Matters Arising from 101st Meeting:

6.1 Sharing final exams

(Deanna Baxter, Capilano University): Historically BCCUPMS participants would bring paper copies of their exams to share with each other. Then when institutions started posting exams online we stopped doing it to save paper. Since then, things have changed a lot (technology, pedagogy, course content, etc.), so wanted to discuss and consider whether we can share exams again somehow.

(Stephen Brown, Okanagan College): There are little footnote symbols on the BCCUPMS site next to names of people/institutions willing to share, but this is just grandfathered from long ago.

(Deanna Baxter, Capilano University): Could we have a firewalled region to access/store exams to share?

(Stephen Brown, Okanagan College): yes, we could have a password protected area.

(Costa Karavas, VCC & UCW): In the past, this committee's emphasis was on first year calculus learning outcomes and we produced some documents to help normalize these. That is why we shared exams and course outlines. Once that was all settled, we tried to do similarly with linear algebra, but it was less successful. Then we gave up bringing paper copies around 2010.

(Natasha Davidson, Douglas College): Looking at a paper exam gives me a window into a different institution's course/exam that I don't get any other way. I don't think we should be so worried about our past exams being publicly available.

(Gary McGillivray, UVic): I have a webpage of all my exams going back to 2009. How many people had a website with open access to calculus exams? (The response was none).

(Deanna Baxter, Capilano University): Most of us have lost our open access websites, and are behind LMS logins now. Maybe we could use the BCCUPMS site for posting exams that are publicly available. This might put a higher burden on our website coordinator though.

(Stephen Brown, Okanagan College): I brought a paper exam to share at this meeting.

(Deanna Baxter, Capilano University): Anyone who wants can bring a paper exam to share around the group tomorrow.

A lengthy discussion ensued about the challenges of sharing exams publicly, and whether different institutions and instructors typically provided past exams or practice exams for students to use.

Some instructors indicated that their exams are collaboratively created between many instructors, and so cannot easily be shared: (Alex Liu, KPU), (Deanna Baxter, Capilano University), (Eugene Belchev, Langara)

Several instructors indicated that they are not comfortable posting exams publicly, but are willing to share exams if they are asked individually by email: (Eugene Belchev, Langara), (Ben Vanderlei, UFV).

Several instructors indicated they would be willing to post exams to the BCcupms website if it was behind a password protected firewall: (Maria Magno, WCC), (Ben Vanderlei, UFV), (Maja Grubisic, Langara).

(Deanna Baxter, Capilano University): We should go with what the majority is comfortable with, so behind a password protected firewall sounds like it would be necessary. Stephen, can we do that?

(Stephen Brown, Okanagan College): Yes, we can make individual accounts.

(Deanna Baxter, Capilano University): The institution representatives should be the contacts for this.

(Deanna Baxter, Capilano University): I think we are agreed that the real purpose of the exam repository is to share exams between us, not for students to use.

(Stephen Brown, Okanagan): I think we can create a login for each person with an "author" permission for the reps.

(Deanna Baxter, Capilano University): OK, we can also create general categories to store them in (linear algebra, calculus, etc). Great, we did something!

6.2 AI/Chat GPT

This item was moved to New Business, Item 13.2 on the next day, due to time.

Plenary Session #3 3:00 PM

7. Institutional Reports (highlights) Part 2 (appended in the minutes below)

The remaining institutions outlined highlights from their reports relating to enrolment, new programs or courses, new hires and retirements, and the use of Open Education Resources.

Session Adjourned 5:02pm

Wednesday, May 15, 2024

Plenary Session #4 9:00 AM

8. Committee Business

8.1 Webmaster's Report – Stephen Brown, Okanagan College

- There have only been a few changes since the major overhaul of the BCcupms website last year.
- One addition is a page on Indigenization. This contains information on decolonization, indigenization and first peoples principles of learning. This page contains some recommended publications for reading and external websites for reference.
- The site is currently using Wordpress. The domain name and wordpress subscription are the main expenses. The total for the year is $216.73, most of which has been funded by individual donations by members. Website funding information can be found at https://bccupms.ca/website-funding/
- Stephen discussed usage statistics collected for the site, and indicated that it is primarily used in April & May, by committee members to prepare for the meeting.
- Stephen welcomes suggestions for how to use the site better or more.

Questions/Discussion:

(Eugene Belchev, Langara College): Thank you to Stephen for the wonderful job. Is there an easy way to see all institutional reports?

(Deanna Baxter, Capilano University): They are always in the minutes. But maybe Stephen could set up a dropbox.

(Stephen Brown, Okanagan College): The minutes are posted on the website back to 1999.

(Susan Chen, Camosun College): Can we share open source textbooks information (eg. a list and links to what resources we are using) somehow on the site?

(Stephen Brown, Okanagan College): It's a good idea and easy enough to do, but someone (or many people) would need to have an author role and take charge of it.

(Ana Culibrk, Columbia College): Financing of the website from BCCAT might depend on whether we have a policy for the website.

(Deanna Baxter, Capilano University): Would we want to work on that now, since we aren't sure that we could get funding?

(Stephen Brown, Okanagan College): If we have an open forum/blog to share, we should have a policy on who and what should be posted.

(Ana Culibrk, Columbia College): I volunteer to help develop a policy. Natasha Davidson (Douglas College) also volunteered. Stephen Brown (Okanagan College) agreed to assist them.

(Deanna Baxter, Capilano University): A reminder for people to donate to the website if possible so that Stephen is not out of pocket.

(Deanna Baxter, Capilano University): As follow-up, are we comfortable with continuing this way with the website?

(Alex Liu, KPU): Can we create a membership/subscription that would issue receipts to claim?

(Susan Oesterle, Douglas Collage): As someone who has done this before, it turns out that it is a lot of work and not worth the effort.

(Sam Pimentel, TWU): Could this be added to the host institution expenses?

(Deanna Baxter, Capilano University): Then how does it get administered and repaid to Stephen?

(Sam Pimental, TWU): Are there receipts?

(Stephen Brown, Okanagan College): Yes, I have Wordpress receipts, but they are not billed to the institution.

(Natasha Davidson, Douglas College): I don't know if that would have made it through if I had put it in my budget as the host institution. I much prefer if we just remember to pay individually.

(Alexandra Blair, NIC): I think if I was the host institution the website cost would not go over very well with my dean.

(Susan Chen, Camosun College): Would PIMS be willing to fund it?

(Stephen Brown, Okanagan College): No, we have discussed that in the past.

(Alex Liu, KPU): Can we try and get the host to pay on a year-by-year basis?

(Susan Oesterle, Douglas College): As an AD, I know that Douglas has hosted 4 articulation meetings this year, and the expenses are very high, so it certainly wouldn't be guaranteed they would fund it.

(Stephen Brown, Okanagan College): Most of the cost for this year has already been funded by personal donations.

(Alexandra Blair, North Island College): We should add a reminder for participants to donate as a line item in next year's agenda.

8.2 Report from Nominating Committee and Election(s)

The nominating committee shared that they looked long and hard and the current Chair, Deanna Baxter, has agreed to run again for the position of Chair. Vice Chair Costa Karavas (VCC & UCW) made three calls for nominations with no additional nominations. Deanna Baxter (Capilano University) is re-elected by acclamation to the position of BCCUPMS Chair for another 2 year term.

8.3 Location, Dates, Agenda items for 103rd Meeting

- Will take place at Okanagan College, Penticton campus.
- Dates will be: May 13 & 14th, 2025.
- Okanagan College with decide if they want to also host the Sharing Math portion of the meeting and will report to the Chair in the future.

Suggested Agenda items:

- (Michael Monagan, SFU) What programming courses should a math major take?
- (Michael Monagan, SFU) What math software packages should math majors be learning?
- (Michael Monagan, SFU) Which courses should incorporate the use of math software?
- (Deanna Baxter, Capilano University) A consideration of Discrete Math and Introduction to Proof courses. Are these being pitched at the right level for our students, and who is teaching them (Computer Science or Math departments and instructors)?

8.4 Proposed Dates and Location for 104th Meeting

- Kwantlen Polytechnic University and Langara College have tentatively been proposed as locations. Their representatives will confer with their institutions and report back on their availability.

- The University of Victoria has tentatively volunteered to be a back-up if no lower mainland institution can be found to host.

Questions/Discussion:

(Deanna Baxter, Capilano University): Should we continue the slow transition to in-person attendance as the primary mode for this meeting? Are institutions requiring their participants to attend online if that is an option?

Many representatives (Dean Slonowky, Andrea Hyde, Michael Monagan) indicated that they found the in-person meeting more valuable, but that some representatives would not be able to attend if there was no online option.

(Deanna Baxter, Capilano University): Hybrid meetings require the host institution to have the facilities to run a large hybrid meeting. Does this present an impediment to some institutions being able to host, and if so, do we want to stop requiring that the meeting be offered in hybrid format? (i.e. have an online option when possible, but not necessarily every year?)

(Jane Butterfield, UVic): We do not have a large enough room wired to run a hybrid meeting.

(Natasha Davidson, Douglas College): Our breakout room for this meeting is not hybrid capable. I know it is theoretically possible to run a hybrid meeting in other ways, but it was a stretch for Douglas to run the hybrid format, and we are a pretty big institution.

(Alex Liu, KPU): Similarly, the Richmond KPU campus does not have facilities that can do this.

(Stephen Brown, Okanagan College): For next year's meeting in Penticton, we can make hybrid happen, but the expectations for technology should be pretty low.

(Deanna Baxter, Capilano University): So it sounds like the pool of possible hosts is much smaller if hybrid is necessary.

(Ben Vanderlei, UFV): I support leaving it open to the host institution to do what is possible.

(Deanna Baxter, Capilano University): So the general consensus seems to be to drop the official hybrid requirement, but do it as much as possible. (Nods and general agreement)

8.5 List Updates

- To be added to the list serv, email Gary MacGillivray at gmacgill@uvic.ca
- The list serv has been encountering some problems recently, where some recipients do not receive the emails. This seems to be most common with Microsoft 365 users.

Questions/Discussion:

(Susan Oesterle, Douglas College): How do people know if they are getting the messages or not?

(Gary MacGillivray, UVic): You don't know. If your email service rejected it, it comes back to me, but with Microsoft365 sometimes it just disappears. It is inconsistent, you get some, but not others.

(Gary MacGillivray, UVic): If your institution is using Office365 for email and you have your email forwarded to another account, that often causes the problem.

(Deanna Baxter, Capilano University): How can someone be removed from the listserv?

(Gary MacGillivray, UVic): if your email address becomes inactive, after 6 attempts you are removed. You can email me if you have any updates (ie. to be added/removed). You don't have to be a BCcupms representative to be on the mailing list.

Parallel Session #1 10:15 AM

9. Math Break-out Discussion Part 1

9.1 Assessment

(Deanna Baxter, Capilano University): Introduced the questions to be discussed:

1. Has assessment changed in recent years?
2. How can we make assessment a more useful tool for learning?
3. Is anyone being asked or choosing to implement alternative assessments for students with accessibility needs?

Representatives then took turns addressing these questions

(Ana Culibrk, Columbia College): during Covid, I did oral exams instead of midterms. It was very time consuming. Since then, I have a few times run oral exams for students that needed them for accessibility reasons, and I found that it worked quite well. I would send the rules in advance, require their microphone and camera to be on for the duration, and they would have 15-20 minutes to write answers and then respond orally. Because it is so time consuming, I now only use it for special cases.

(Eugene Belchev, Langara College): When you ran these oral exams, who determined whether that accommodation should be given?

(Ana Culibrk, Columbia College): Student services.

(Eugene Belchev, Langara College): Were the paper and oral exams equivalent?

(Ana Culibrk, Columbia College): No, the oral exams were only one hour, so there were fewer questions, but they would get more follow-up questions on those.

(Natasha Davidson, Douglas College): Which did you find gives a better assessment of understanding, oral or written?

(Ana Culibrk, Columbia College): I think written is better, but I one student who was in several of my classes and I had a good understanding of his knowledge, so then in that case I felt that oral assessment was just as good.

(Natasha Davidson, Douglas College): How was the oral exam less good as an assessment?

(Ana Culibrk, Columbia College): On the oral exam I might get a better feeling of their understanding of those questions, but there must be fewer. Written exams let me test a larger number and range of topics and concepts.

(Dean Slonowsky, VIU): Did your accessibility office propose oral exam as the accommodation?

(Ana Culibrk, Columbia College): Accessibility discussed with me what the student's limitations were. Generally we defer exams, but they were a very special case.

(Dean Slonowsky, VIU): How did the student feel about it? Were they anxious?

(Ana Culibrk, Columbia College): He was a very good and confident student and felt comfortable with it. When I did oral exams during covid times, I did a survey afterwards and students felt on average similarly to a traditional written exam.

(Gary MacGillivray, UVic): Oral exams and written exams measure different things.

(Andy Basi, Acsenda): If a student cannot write an exam for any reason there is usually a process for deferring and, like most institutions, we have a process and scheduled times for this. If they cannot make the deferred exam, then they can ask again for a custom exam, but they must pay for it.

(Deanna Baxter, Capilano University): In a colleague's class with only 6 students, students were offered either a traditional written exam or an oral exam, but students voted overwhelmingly to have a traditional exam.

(Andrea Hyde, College of the Rockies): In my course, I ran two versions of assignments. Version 1 closed earlier and had 3 attempts, version 2 was open until the final exam and was allowed unlimited attempts. There was also a version 3 that was for practice, and was not for marks. I then used a weighted average of the two "for marks" versions for their final grade calculation. I liked this because it allowed repeated opportunities for immediate feedback and an incentive to improve their grade. It also means that I never need to allow late submissions.

(Ana Culibrk, Columbia College): Why do you only allow 3 attempts on version 1?

(Andrea Hyde, College of the Rockies): I want them to feel a bit of pressure.

(Dean Slonowsky, VIU): How many students skip doing version 1 at all and wait until the end of the term?

(Andrea Hyde, College of the Rockies): Almost no one.

(Deanna Baxter, Capilano University): Have you considered making version 2 not available until after the closing of version 1?

(Andrea Hyde, College of the Rockies): I will have to think about it.

(Eugene Belchev, Langara College): What is your typical course grade distribution (in term of weighting of different assessments)?

Many representatives provided answers. The typical answer was Labs or Assignments worth 10 or 15%, Midterms 35%, Final exam makes up the rest.

(Eugene Belchev, Langara College): Have any of you been pushed by an external body to change your methods of assessment? We received a letter from a human rights tribunal. The suggestion from the human rights tribunal was that due to special circumstances for a student, the proposed (standard) assessment methods and policies are not appropriate for this student.

(Gary MacGillivray, UVic): We have had something like this. The accommodation needs of a student were very far out of the typical format for the course (eg. no tests, no requirement to attend in person, etc.).

(Natasha Mandryk, VCC): We have had a general push to change our assessment methods to make them less exam heavy.

(Deanna Baxter, Capilano University): I have not experienced a push to change, but how do we feel as a community about exams as our major assessment tool?

(Deanna Baxter, Capilano University): We have had some students with extremely broad accommodations that made it very difficult for the students to actually complete the course.

(Natasha Davidson, Douglas College): Sometimes we get requests from accessibility that are in conflict with the course. Once, this brought accessibility and the student into a conversation about it that ended up being very productive. We love our exams, but it is good to be flexible about them.

(Costa Karavas, VCC & UCW): The nature of students has changed. Do we need to adopt our assessment methodologies for these new learners?

(Deanna Baxter, Capilano University): I don't know that we have much of a choice. Every institution is different in terms of who they are trying to reach. I feel like I am competing for my students' time and energy.

(Deanna Baxter, Capilano University): I run in-class assignments (she then described these in-class assignments.)

(Paul Tsopméné, UBC Okanagan): I like the idea of in-class assignments, but do you have time to cover all the material?

(Deanna Baxter, Capilano University): Generally no. This works best in classes that have a flipped model or a tutorial attached to them.

(Paul Tsopméné, UBC Okanagan): Did you see any changes in grades or other evidence of improved understanding as a result of the in-class assignments?

(Deanna Baxter, Capilano University): Not necessarily or obviously better understanding, but there were many indications that students had better attitudes and enjoyment.

(Stephen Brown, Okanagan College): Like Andrea, I try to focus on having low-stakes assignments. I set up assignments to always have a practice version of the assignment after it has closed. But then I have a disconnect between assignment and test grades, so I tried to do something to bridge the gap. I took Apex calculus and linked it by section into their homework system. I also linked in their formula sheet.

Stephen Brown spent some time showing his custom online homework system, that includes solutions, links to text, links to formula sheet, etc. It is based on MyOpenMath.

(Natasha Davidson, Douglas College): Does anyone else use the final exam to override previous assessments? For instance, do you reweight grades based on final exam performance? I also give out past exams and even marking keys to them.

(Michael Monagan, SFU): Final exam marks are usually lower than other marks, so when I see a student who went the other way I do bump them. We are now trying an 8 assignment, 3 midterm model. In the past it was 10 assignments, 1 midterm, 1 final exam.

(Alex Liu, KPU): Similar to Micheal, my final grades are usually lower, so if a student does really well I bump them up.

(Andrea Hyde, College of the Rockies): When I first picked up my courses from past instructors, there were 3 midterms, with only the best 2 out of 3 counting towards the final grade. I found 3 midterms used too much instructional time, so I moved to 2 midterms with 20% weight on their best grade, and 10% weight on their lower grade.

(Natasha Davidson, Douglas College): I do formalize for students how I will use a variable weighting policy.

(Deanna Baxter, Capilano University): Yesterday, Ben Vanderlei brought up “articulating grey area courses.” Shall we discuss that now?

(Ben Vanderlei, UFV): The grayest of gray areas is when we get a course to assess that clearly does not align with any of courses, and we have to decide if it can count as generic credits. In that case, does it qualify as Math 1XX, or Math 0XX (i.e. sub university level)? So, I have concerns about what counts as 1XX vs. not 1XX.

(Deanna Baxter, Capilano University): We have a 100-level course that does not qualify for math or science degrees, but can qualify as a numeracy requirement in an arts degree etc.

(Deanna Baxter, Capilano University): How many institutions have an algebra course at the 100 level?

Several institutions (Douglas College, KPU) indicated that they do.

(Brian Wetton, UBC Vancouver): The US has lots of 100-level courses that are pre-calc, etc.

(Natasha Davidson, Douglas College): I received no credit for my favourite course that I took at UBC in the math department, because it was not valid Science credit. Is it reasonable to consider these courses as not "real" math courses?

(Deanna Baxter, Capilano University): As times change, it is difficult to not be elitist or protective of our courses.

(Alex Liu, KPU): At KPU we have a placement test to stream students to pre-calc etc.

(Dean Slonowsky, VIU): I find it challenging to assess courses taught by other departments that list all the right things in the course outlines, but they often list way too many possible learning outcomes to cover them in any depth.

(Michael Monagan, SFU): I ask for the final exam in these situations.

(Susan Oesterle, Douglas College): To get back to Ben's original question, I see a lot of these. I think what you are doing is appropriate. If it is something that your institution doesn't do, then it is no credit. Survey courses are reasonable to be 1xx credit because community college courses like these probably have the same intent as survey courses at a bigger institution.

(Gary MacGillivray, UVic): What are the Math requirements to be an elementary school teacher? One 100-level math course? Two?

General response from several representatives: It depends on the PDP program.

10. Stats Break-out Discussion Part 1 (See Stats Subcommittee Meeting Agenda)

Parallel Session #2 1:00 PM

11. Math Break-out Discussion Part 2

11.1 Accuplacer and other placement options

(Saeed Rahmati, TRU): We would like to know what placement test options other institutions have. We use Accuplacer to place students into pre-calculus or earlier courses. We do not have a test that can place students into Calculus 1.

(Alex Liu, KPU): We have a "Math Placement Test." Alex described their test, which uses the ALEKS PPL system. More details can be found at the website: https://www.kpu.ca/testing/math/mpt

(Patrick Montgomery, Camosun College): We also use Accuplacer. It was pretty good for placing students into our ABE courses. We also developed cut-off scores to place students into some of the university level math courses.

(Deanna Baxter, Capilano University): Does Accuplacer require a license?

(Patrick Montgomery, Camosun College): Yes.

(Deanna Baxter, Capilano University): We have developed our own placement tests. They are primarily now used by international or out of province students. If we grew to a size where we could no longer administer our own placement tests, Accuplacer sounds like it would be a good choice.

(Ben Vanderlei, UFV): We use Accuplacer for ABE courses, and also our own for calculus placement. There is a cost of ~$20 to the student.

(Alex Liu, KPU): We charge $30 for the placement test, and sell a booklet in the bookstore about how to prepare for it.

(Ana Culibrk, Columbia College): We have 2 tests used for placement. One for students who have not had math 11/12, the other for students who did complete math 12, and they can be placed into Calculus 1.

(Natasha Davidson, Douglas College): Likewise, we have 2 placement tests. The lower level one has pretty good predictive value, and we have many versions of it so that students are very unlikely to get the same test again. Students are limited to writing it once per year.

(Deanna Baxter, Capilano University): The Open Learning pre-calculus course at TRU does not have pre-requisites, so students can and do find a way to take pre-calculus even if a placement test indicates they are not ready for it.

(Dean Slonowsky, VIU): Because success in our life sciences calculus was low, they now have a 10 question assessment test. About 150 students take it and the average score is 6/10. If a student scored less than 3/10, they were strongly recommended to take a pre-calculus course first.

(Saeed Rahmati, TRU): We have a challenge with international students not wanting to pay for courses that do not count towards their degree.

(Alex Liu, KPU): We have an early alert system, that recommends students who do poorly on their first test to move to a course one level lower. We find that it benefits students who follow the recommendation, but many students do not want to take an extra course that does not count towards their program.

(Eugene Belchev, Langara): We also have 2 placement tests, but we have the same problem. We can only strongly recommend that students follow their placement result/suggestion.

(Deanna Baxter, Capilano University): Hopefully you can all report back about Accuplacer next year to let other institutions know how well it is working.

(Deanna Baxter, Capilano University): Since we have time, let's return to the 3 questions that Michael Monagan brought up:

1. What programming courses should a math major take?
2. What software packages should math majors be learning?

3. Which courses should incorporate the use of math software?

(Costa Karavas, VCC & UCW): We do not have a math major, so I will pass.

(Doug Henderson, Selkirk College): We only teach 1st year courses, and so we do not use anything beyond some statistics software.

(Saeed Rahmati, TRU): No software is required of our students. Math majors take 2 computer programming courses. One is in Java, and I am not sure about the second one.

(Brian Wetton, UBC Vancouver): For Math 210, we use Python and Jupyter notebooks.

(Eugene Belchev, Langara): We use Octave and Python at Langara. Our students in the associate program must take two courses: OOP in Java or C++, and Program Design.

(Gary MacGillivray, UVic): All students take 1st term Python or C++, and either 2nd term Computer Science course OR a data science course (in R) OR computer assisted mathematics (in Python). For software packages, they work with Python, Jupyter notebooks, RStudio, Matlab and Sage. It all depends on the course. As a general comment, a growing number of our courses use math software.

(Natasha Davidson, Douglas College): There are many different types of math degrees. I think we should be careful about what *should* means in this context.

(Bill Vanderlei, UFV): We require one first year programming course. For software, we use Python and Jupyter notebooks. Some courses use R. All math majors are required to learn latex. Maple is used here and there, but is not mandated software.

(Alex Liu, KPU): We have 3 streams. We have 2 required computer science courses: “Program Structure and Design” I and II. For Calculus I, we require students to know Maple, but there is just one hour of instruction on it.

(Ana Culibrk, Columbia College): We have an associate degree in math. There are two required courses: “Introduction to Computer Science and Programming” I and II, which are in C++. For statistics, we only use Excel.

(Natasha Mandryk, VCC): We do not have any degrees. Our computer science classes use C++, and our math courses use Matlab. In statistics, we use Excel and R.

(Stephen Brown, Okanagan College): Students must take programming I and II, which are in Java (but the engineering section uses C++). For calculus 1 and 2, all students take a 1 hour Maple lab. Linear Algebra and Differential equations also have a 1 hour Maple lab. For introductory statistics, we use Excel, but could move to R.

(Andy Basi, Acsenda): We do not have a math major, so I have no input.

(Michael Monagan, SFU): We require two programming courses, one in Python and the other is in C++. We require two math courses that use software, one that uses Matlab, and one that uses Maple.

(Patrick Montgomery, Camosun College): At Camosun, we had difficulties with IT maintaining Maple and it also became expensive, so we stopped using it during the panic. We now use free software like Desmos. We use a little bit of Matlab/Octave for 1st year engineering math.

(Sandra Merchant, BCIT): We do not offer any math degrees, but we use Matlab for most of our engineering program math courses. We also use some Maple, but are currently looking at cutting it due to costs. R is used in most of our statistics courses, with some using Excel as well.

(Deanna Baxter, Capilano University): For our general BSc, they use Python in their 1st year "Learn to Code" course. Computational science concentration students are required to take a 2nd course (in second year) in Python. We incorporate Desmos and Wolfram Alpha into our math courses. For statistics we use R and Excel.

(Jason Diemer, NIC): In calculus 1-4 we typically use Geogebra, or wolfram alpha. We use Excel in calculus 1 and 2. Engineers must take 2 computer science courses, typically in Java. Statistics students use R.

(Dean Slonowsky, VIU): We require 2 computer sciences courses, one of which is OOP. For software packages, we use Matlab and R. What is best for data science: R or Python? (some general discussion on this, but no consensus).

(Paul Tsopméné, UBC Okanagan): We require 2 computer science courses: computer programming I and II. We primarily use open source software packages. There is some use of Python, Maple and Matlab in higher level courses.

(Krishna Subedi, Alexander College): In statistics we use R. Otherwise, there is not much software used in our math courses.

(Deanna Baxter, Capilano University): Do we think the use of software or not should affect articulation of courses?

(Eugene Belchev, Langara College): We should not require it for transfer, but many of us feel it should be strongly encouraged.

(Brian Wetton, UBC Vancouver): It is a disservice if we graduate someone with a math degree without them knowing how to use any math software.

(Alex Liu, KPU): Our IT department has made it too difficult for us.

(Stephen Brown, Okanagan College): I agree that computing should be a part of a math degree, and although it is hard to police, it is easier for a student to pick up a new language/package/software if they've been exposed to one in their degree.

(Ana Culibrk, Columbia College): I think there is great value, but the instructional time required is a concern.

(Michael Monagan, SFU): That was the motivation for us to have separate courses. At some point we decided to do the theory first, and then the software component after.

12. Stats Break-out Discussion Part 2 (See Stats Subcommittee Meeting Agenda)

Plenary Session #5 2:15 PM

13. New Business

13.1 Highlights from parallel sessions

- Costa Karavas (VCC & UCW) shared highlights from the Math Break-Out discussions. Details can be found in items 9 and 11 above.
- Bruce Dunham (UBC Vancouver) shared highlights from the Stats Break-Out discussions. See the Stats Subcommittee minutes for details.

Questions/Discussion:

(Bruce Dunham, UBC Vancouver): Just a comment on using Excel for our courses. The current trend is towards reproducible workflows, which is not possible in Excel. To learn more about reproducibility, there is a book by Tiffany Timbers, Trevor Campbell and Melissa Lee, "Data Science: A First Introduction." It uses R and the Tidyverse, but there is a Python version available as well. This might be a useful resource for creating an introductory data science course.

13.2 AI/Chat GPT

(Deanna Baxter, Capilano University): In pure math courses, we don't have much assessment done at home because there were already many ways to cheat. Our administration would like us to fully embrace AI. It seems there is a reluctance to acknowledge the potential for academic dishonesty.

(Natasha Davidson, Douglas College): Isn't using AI and other people's results a part of learning? Maybe we need to revisit our goals.

(Deanna Baxter, Capilano University): Yes, the line between plagiarism and appropriate work can be hard to define.

(Andy Basi, Acsenda): It's a timely topic, and is a heavy topic in all other areas. What we are talking about is do we embrace it and if so how do we incorporate that into how we teach and assess students?

(Jane Butterfield, UVic): At UVic we got a position statement on AI very early on and thought it would quickly be followed by a policy, but it has not yet. UBC has a delightful flowchart about when it is valid to use AI. I was dismissive of ChatGPT at first, but in the assistance center students spend an enormous amount of time trying to use it and understand its output, even when it is nonsense output.

(Deanna Baxter, Capilano University): The first item in that flowchart is "Does it matter if it is true?". Deanna gave several examples of cases when it gave completely invented quotes etc.

(Bruce Dunham, UBC Vancouver): I think the big danger is that students will use generative AI in a way that circumvents learning.

(Michael Monagan, SFU): Instructors can no longer give a large weight to assignments, because students are using too much generative AI to do them. So they are shifting more weight to exams. I agree with Bruce that there is a real danger that students will avoid learning by using AI.

There followed some discussion among many about why students want to avoid the work of learning.

(Deanna Baxter, Capilano University): A downside of math exams is that we typically restrict students to a short timeframe, so students don't get to work long term on problems. Now, because of AI assistance, it sounds like computer science might head in the same direction.

(Alexandra Blair, NIC): I think mostly students just don't have much time, so they resort to shortcuts, including AI help.

(Alex Liu, KPU): Some students will always take the path of least resistance. I think we should discourage them from this, but my chief concern is about fairness. It is not fair if a cheating student can get a better grade than one that is not cheating.

(Mateen Shaikh, TRU): So many students are dropping to part time because they need to work 30+ hours per week, so it is not surprising they want to spend less time on course work.

(Deanna Baxter, Capilano University): Is there a real difference between AI and Wolfram Alpha help in a math course?

(Jane Butterfield, UVic): ChatGPT can write a convincing proof by induction, or solve combinatorics problems. For computation problems, the main difference from Wolfram Alpha is that ChatGPT can, for instance, do the integral wrong.

(Mateen Shaikh, TRU): Students love to evaluate the answers that ChatGPT produces and learn when it is valuable to use and when it is not.

(Bruce Dunham, UBC Vancouver): Here's a way to use it in your class: Find the most difficult concept in your course, and get your students to ask ChatGPT to "explain <concept> to a 15 year old," and discuss what ChatGPT produces. Try different age levels.

13.3 Dual Credit Courses

(Susan Oesterle, Douglas College): The Ministry of Education recently put out a call for proposals for dual credit courses (i.e. courses that count as high school and post-secondary credit). Are any of your institutions doing this?

(Alexandra Blair, NIC): We had one for Biology, I think physiology and anatomy.

(Deanna Baxter, Capilano University): Capilano was approached by a private school that wanted to offer one or two Capilano courses, but they wanted to teach it themselves. I don't think it went anywhere because the distribution of resources and work were not fair.

(Ana Culibrk, Columbia College): Columbia gives dual credit for pre-calc and differential calculus, because they also have a secondary program.

(Natasha Davidson, Douglas College): Douglas used to teach some courses in a high school, but no longer do. They found that it was not in fact helpful for recruiting, as those students all then went to big institutions.

(Patrick Montgomery, Camosun College): At Camosun the intention was to branch out to high schools for outreach (but it did not work for recruiting), but also just to be a good community partner (this was more effective). Out classes were run in the high schools. We found there were pitfalls: the scheduling is problematic and ends up creating a term position which means a lot of turnover. There was also a disconnect with dealing with student issues, as the high school had to deal with disciplinary and administrative issues for the student. I think it could be more effective to go the other way, and bring students from high schools to the post-secondary institution for their classes.

(Jane Butterfield, UVic): There is a program at the University of Minnesota where high school teachers came to the university for professional development days and were given course materials, and then the high school teachers taught the courses using the exams provided by the university.

(Andrea Hyde, College of the Rockies): Just a comment to make sure that you check your collective agreement before you make plans that assign post-secondary teaching work to other groups.

Motion (Stephen Brown, Okanagan College): To adjourn the 102nd BCcupms. Seconded (Natasha Davidson, Douglas College). **Approved by consensus.**

Adjourned 3:30 PM

14. Reports

14.2 BC Secondary Schools math Contest – Saeed Rahmati (report included in the Supplemental Reports below)

- This year, over 1000 students participated in the preliminary round at their high schools in March.

- On May 3, 2024 about 450 students participated in the final round at ten provincial colleges and universities.
- Next year, the preliminary round will take place March 5, 2025, and the final round on May 2, 2025.
- All help is welcome. You can contact Suzanne Feldberg sfeldberg@tru.ca if you are interested in getting involved.

14.3 Math Challengers – Leo Neufeld (full report included in the Supplemental Reports below)

- Math Challengers (MC) is a competition for Grade 8, 9 and Grade 10 students who love math and excel in doing it.
- There is both an in-person version of the competition and an online version of the competition
    - In-person , the competition has 4 stages: two individual written stages, one team session and the final (Face-off) one-on-one stage for the top 10 students.
    - Online , the Face-off Stage is run first and is open to all registered students. The other three stages are run in participating schools.
- The top schools from each grade level are then invited to the Provincial Finals competition, which was held at UBC (Vancouver) on April 13th this year.
- This year about 1190 students participated at the Regional level, which was up significantly from 2023. Grade 8 teams registered from 51 different schools, Grade 9, from 44 schools and Grade 10, from 38 schools.
- Planning for the 2025 Competition is already underway. If you are interested in getting involved or informing teachers in your region so they can get involved, all the needed information is on the website: http://mathchallengers.ca/

Meeting with High School Teachers 4:00 PM

Teachers present: Jodie Eaton – Centennial Secondary & Chris Hunter BCAMT President

Introductions were made, Deanna described the BCCUPMS is and does. We like to involve secondary school teachers to our meetings to keep us aware of what skills students are coming out of the high school system with.

14.1 BCAMT – Chris Hunter, BCAMT President (presentation slides available on the BCcupms website)

- Chris led us through an activity on “Kaktovik” Numerals. Prior to this, a group of students had been asked to create written symbols for numerals that exist in an Inuit community’s oral language. Then the activity asked us to map these symbols to the Arabic numerals they represent based on the results of some basic arithmetic operations.

- Embedding First peoples principles of learning is a focus of secondary education work these days, and much work is being dedicated to decolonizing the math curriculum.
- In K-12, teachers are also wrestling with how to do this sensitively and without appropriation.
- Chris strongly advocated for the methods in "Building Thinking Classrooms in Mathematics, Grades K-12: 14 Teaching Practices for Enhancing Learning" by Peter Liljedahl.
- Some curriculum updates:
    - In terms of the transition from high school, note that in BC grade 12 math there is no longer any geometry (no conics).
    - From the perspective of teachers, there has been some stability in the curriculum. For the most part, content has remained stable, but what has changed is the curricular competencies. The new competencies try to emphasize more competencies in doing mathematics, rather than knowing mathematics. Chris showed some examples of these curricular competencies.
- Assessment is ever changing, and most teacher concerns currently center around assessment and reporting.
    - At K-9 level, letter grades are long gone and the proficiency scales now consists of: emerging, developing, proficient, and extending. The definitions of these are intentionally vague to allow teachers to define these for a particular competency themselves.
    - For Grades 10-12 there are still letter grades and percentages.
    - There is also some transition from the traditional points-based assessment system (students accumulate points tied to events), to a standards-based system (students demonstrate evidence in relation to learning standards).
    - Evidence of student learning is expected to be collected from a range of sources (products, observations, conversations) and triangulated to determine a student's proficiency level.
    - Recency of evidence should also be taken into account, meaning that evidence collected at different times should be weighted differently (with more recent evidence having a higher weight).
- We are seeing higher levels of anxiety and depression in students, thought to be related to social media.
- -Big question: what supports are in place for students transitioning to post-secondary?

Questions/Discussion:

(Alexandra Blair, North Island College): Can students fail?

(Chris Hunter, BCAMT): K-7 does not tend to have failures. At 8-9: failure is possible but involves consultation.

(Natasha Davidson, Douglas College): If a student gets a 0 for something they didn't hand in, is that calculated into their grade? Answer: It would not be based on the new approach, but traditional practices are still common.

(Costa Karavas, VCC & UCW): What is happening with cell phones in schools?

(Teacher): There is a ministry mandate starting in September, but details are not decided.

There was some general discussion (Natasha Davidson, Teacher, Sandra Merchant) about the pros and cons of cell phone and technology use in classes, both in secondary and post secondary.

(Ben Vanderlei, UFV): You mentioned in your presentation that there is a goal to separate assessment from assessing work habits. There has been a lot of concern about work habits and organization. If work habits are not assessed, does this undermine students' ability to succeed in post-secondary?

(Chris Hunter, BCAMT): There is still space in the reporting to comment and assess these, it is just separating the proficiency in the content from work habits.

(Bruce Dunham, UBC Vancouver): Regarding keeping letter and percentages for Grades 10-12, universities do need numerical scores for admissions purposes, but maybe the onus should be on the institutes to do this? Would the teachers prefer that?

(Deanna Baxter, Capilano University): I do want some way to differentiate students. When we set pre-requisite requirements (as a % etc.) it is because we want to set students up for success. When students come to us, I need a way to decide which courses a student should take, or whether they are prepared for a course.

(Natasha Davidson, Douglas College): We looked at the predictive value of pre-requisites. It turned out that English 12 was a better predictor than Math 12. Not all students go on to post-secondary, so is it reasonable for us (post-secondary institutions) to set the mandate that Grades 10-12 must have percentages? Probably not.

(Jane Butterfield, University of Victoria): This seems like a good time to mention "The Grading Conference," held online June 13-15, for anyone interested. (https://thegradingconference.com/)

(Jane Butterfield, University of Victoria): The new curriculum seems to have an emphasis on collaboration. This year, I have noticed increased sociality and collaboration in our assistance center, to the point that we had to change the furniture because they wanted to work together. I feel that collaborations seems to have come back post-covid, and even stronger than before.

(Deanna Baxter, Capilano University): That seems like a positive note to end on!

14.4 Calculus Challenge Exam – Brian Wetton

- The Calculus Challenge Exam is being hosted by UBC this year.

- The exam takes place June 12, with registration by May 26.
- More details are available at the website: https://outreach.math.ubc.ca/calc_challenge.html/

15. Open Discussion 4:30 PM

Due to time, there was no additional discussion.

List of Committee Members Present (x-in person, o-online)

Note that Math/Stat refers to the Mathematics and Statistics parallel sessions, respectively

Name	Affiliation	May 14		May 15				
		AM	PM	AM	Math	Stat	PM	With Teachers
Ananya Chakraborly	Acsenda School of Management	X	X	X	X		X	
Andy Basi	Acsenda School of Management		X	X	X		X	
Dave Sanyal	Acsenda School of Management	X	X	X	X		X	
Krishna Subedi	Alexander College	O	O	O	O		O	
Chris Hunter	BC Association of Math Teachers	X	X		X		X	X
Arianna Cheveldave	BCcampus	X	X					
Rob Fleming	BCCAT		X					
Sandra Merchant	BC Institute of Technology (BCIT)	X	X	X	X		X	X
Simin Jolfaee	BC Institute of Technology (BCIT)	O	O	O			O	
Leo Neufeld	Camosun College/Guest		O					O
Patrick Montgomery	Camosun College	X	X	O	O		X	
Susan Chen	Camosun College	O	O	O			O	
Deanna Baxter	Capilano University	X	X	X	X		X	X
Reefat	Coast Mountain College	X	X	X	X			
Tracy Wall	College of New Caledonia (CNC)	O	O	O	O		O	X
Andrea Hyde	College of the Rockies	X	X	X	X		X	X
Ana Culibrk	Columbia College	X	X	X	X		X	
Gera Belchev	Coquitlam College	X	X					
Hamid Maghzian	Corpus Christi College	X	X	O	O			
Alan Meichsner	Douglas College	X	X	X			X	X
Diana Castaneda Santos	Douglas College				X			
Natasha Davidson	Douglas College	X	X	X	X		X	X
Susan Oesterle	Douglas College (SLP)	X	X	X	X		X	X
Nadia Nosrati	Fraser International College		O				O	
Alex Liu	Kwantlen Polytechnic University (KPU)	X	X	X	X		X	
Colin Macleod	Kwantlen Polytechnic University (KPU)	O	O	O				
Csilla Tamas	Langara College		O					
Eugene Belchev	Langara College	X	X	X	X		X	
Maja Grubisic	Langara College	X	X	X			X	
Tijana Sretenovic	LaSalle College Vancouver	X	X					
Alexandra Blair	North Island College (NIC)	X	X	X			X	X
Jason Diemer	North Island College (NIC)	O	O	O	O		O	O
Emelie Lee	Okanagan College	X	X	X			X	X
Stephen Brown	Okanagan College	X	X	X	X		X	X
David Leeming	PIMS – University of Victoria (UVic)		O					
Doug Henderson	Selkirk College	X	X	X	X		X	X
Harsha Perera	Simon Fraser University (SFU)	O	O	O			O	
Michael Monagan	Simon Fraser University (SFU)	X	X	X	X		X	
Malgorzata Dubiel	Simon Fraser University (SFU)		O					
Mateen Shaikh	Thompson Rivers University (TRU)	O	O	O	O		O	O
Saeed Rahmati	Thompson Rivers University (TRU)	X	X	X	X		X	X
Sam Pimentel	Trinity Western University (TWU)	X	X	X	X			
Paul Tsopméné	UBC Okanagan			O	O			O

Brian Wetton	UBC Vancouver	X	X	X	X		X	X
Bruce Dunham	UBC Vancouver	X	X	X			X	X
Costa Karavas	University Canada West (UCW)	X	X	X	X		X	X
Mohammad El Smaily	University of Northern BC (UNBC)	X	X				O	
Ben Venderlei	University of the Fraser Valley (UFV)	X	X	X	X		X	X
Gillian Mimmack	University of the Fraser Valley (UFV)			X			X	
Longlong Huang	University of the Fraser Valley (UFV)	O	O					
Gary MacGillivray	University of Victoria (UVic)		X	X	X		X	
Jane Butterfield	University of Victoria (UVic)	X	X	X			X	X
Costa Karavas	Vancouver Community College (VCC)	X	X	X	X		X	X
Natasha Mandryk	Vancouver Community College (VCC)	X	X	X	X		X	
Dean Slonowsky	Vancouver Island University (VIU)	O	O	O	O		O	O
Hamid Maghzian	Western Community College (WCC)	X	X	O	O			
Maria Magno	Western Community College (WCC)	X	X					
Mandev Singh	Yorkville University	O						