

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

MINUTES OF THE 99<sup>th</sup> MEETING, May 11 and 13, 2021

Videoconference (via Zoom)

**TUESDAY, May 11, 2021**

**1. Welcome and Opening Remarks**

Ian Affleck (Chair) welcomed the participants to the 99<sup>th</sup> meeting virtual meeting, reminding participants to remain on mute if they are not speaking and to include their institution beside their name in ZOOM. Also, it was agreed that voting was to occur virtually by raising “hand” in ZOOM where not raising a hand signifies a “yes” vote.

**1.1 Traditional Welcome - Brianna Dick, representative of community elder.**

Brianna Dick from the Lkwungen Territory and with roots in the Namgis Nation (a part of the Kwakwaka'wakw people) gave a heartfelt welcome and greeting to the committee members. Talked about walking in life with a good heart and mind, working with students and uplifting the next generation of students.

**1.2 Welcome from the Host Institution – Debbie Hlady, Dean, School of Arts and Science, Camosun College.**

Thanked Brianna Dick for her inspiring greeting and the articulation members for working on articulation and student mobility in challenging times.

**2. Adoption of Agenda**

The chair shared the screen to view the agenda.

**Motion: That the agenda for the 99<sup>th</sup> meeting be approved.** M – Costa Karavas, S – ?.  
**Approved.**

**3. Approval of Minutes of 98<sup>th</sup> Meeting held by Zoom, June 16 & 18, 2020**

**Motion: That the minutes of the 98<sup>th</sup> meeting be approved.** M- Partha Banerjee, S- Costa Karavas

Discussion: Approval of the BCcupms 98<sup>th</sup> meeting minutes does not include the Statistics subcommittee minutes.

**Approved.**

## 4. Announcements

### 4.1 Introduction of Representatives

Chair scrolled down participants list and invited individuals to introduce themselves.

### 4.2 Notice of election.

At this meeting, elections for the Vice Chair and Secretary of the BCcupms will be held. These have two-year terms. Formation of a Nominating Committee (Gary MacGillivray, Susan Oesterle and Partha Banerjee)

### 4.3 Conferences

- Justin Gray (SFU); Changing the Culture, sponsored by PIMS (free registration).  
<https://www.pims.math.ca/educational/changing-culture>
- Susan Oesterle (Douglas College); Canadian Mathematics Education Study Group, June 11-13, 2021 online; [www.cmesg.org](http://www.cmesg.org)
- Bruce Dunham (UBC-V); SSC conference: <https://ssc.ca/en/meetings>
- Ian Affleck (UFV); Canadian Undergrad Math Conference CUMC, <https://cumc.math.ca/2021/> Aug 19-22. MAA MathFest, Aug 4-7, 2021, <https://www.maa.org/meetings/mathfest>
- Kseniya Garaschuk (UFV); CMS, June 11-15, <https://summer21.cms.math.ca>
- Susan Chen ; 10<sup>th</sup> Indigenous Math Symposium (FULL), <https://edcp.educ.ubc.ca/10th-indigenous-math-symposium/>

15 minute break follows with ZOOM breakout rooms opened by Jane Butterfield (UVIC).

## 5. Reports

### 5.1 BCCAT-Fiona McQuarrie (BCCAT Special projects Coordinator)

Fiona presented on BCCAT's activities relating to Current Transfer & Articulation Projects <https://bccat.ca/Media/NEWBCCAT/pubs/Resources/ACUpdate202104.pdf>

Main highlights from projects:

- Who decides transfer? Who participates and ultimately who has authority to accept transfer.
- Block transfer and Degree partnership.
- Data Governance. Practices at BC post-secondary institutions, and recommendations for best practices in collecting, storing, and accessing.
- Micro-credentials. Policies, practices, motivations, and perspectives in BC and international institutions.

### Additional BCCAT initiatives

- JAM meeting every November. 2020's online meeting had about 350 participants versus only 150 in face-to-face-meetings. Jane Butterfield presented at the 2020 JAM meeting on Conducting Effective Articulation Committee Meetings Online. JAM 2021 meeting will be held online in early November.
- BCCAT has its own UTUBE channel
- BCCAT is looking for a supporter to host the Moodle platform for articulation institutions, as KPU will no longer be hosting. There will be no interruption.
- Articulation maintenance: 35% of courses in transfer guide have not been reviewed in more than ten years. Encouraged curriculum personnel in institutions to review and BCCAT can facilitate this with software that is currently being developed.
- BCCAT transfer guide expanded to include courses outside of BC and international. Transferability of such courses are in the transfer guide that currently transfer with seven BC institutions (UBC-V, UBC-O, VIU, UNBC, Douglas College, Camosun College, NIU, Okanagan College). There are 450 international institutions representing 130+ countries.
- Program specific transfer expanding to include Adult basic education with a course-to-course transferability on the transfer guide.
- Call for proposals. Funding available \$15,000 per project on research on transfer related projects. Deadline is August 23, 2021. Requires a contractor to carry out the project. No applications last year due to the pandemic.

Q. Eugene Belchev (Langara College). How are the institutions for international transfer courses selected?

A: Fiona M. The institutions volunteered when they were asked.

Q. Ian Affleck (UFV). Would need consent from all the programs in the institution?

A; Fiona M. Theoretically would need to be an institution wide decision. Whatever the Registrars think is appropriate.

Q. Ian Affleck (UFV). Demonstrated the updated online transfer guide website by putting in Calculus I as a receiving institution to see equivalent courses from international sending institutions. Is there a filter by country option?

A. Fiona M. Noted down as a useful option.

Q. Ian Affleck (UFV). In terms of renewing and updating existing courses for transfer, is it the onus of the sending institution?

A. Fiona M. The transfer credit person at each institution can update an existing course. When sending a course, it can be noted that it is an update to an existing course for faster response.

## **5.2 BCcampus – Clint Lalonde (open homework systems project)**

Main highlights from Clint Lalonde's, Project Manager, Open Source Homework (OSH) Systems, presentation are:

- Open textbook project has created \$25 million in textbook cost savings.
- Comparative Analysis between OSH systems WeBWorK, IMathAS and Numbas, has WeBWorK leading due to its robust developer community.
- The Centralized Shared Service Model would have an actual cost of \$200k annually (5 institutions) and would be too costly for sustaining this model. Rederly could have been a service provider, but too costly. A Decentralized Institutional Hosting model was sought instead. BCcampus applies one-time bootstrap grants (2 grants of \$30k each) to individual institutions to set-up, maintain and support their own instances of WeBWorK. There was a call for proposals in March-April 2021.
- Two additional projects: i) STEM Content Creation Grants. Four grants (\$5K each) to create STEM based question sets in open systems (WeBWorK, IMathAS, PrairieLearn) openly licenced; ii) UBC-O grant to develop question translator to move questions between platforms, openly licensed.

Q. Justin Gray(SFU). Is there a core group of developers and how often is info updated?

A. Clint L. There is a big group, that meets a couple of times a month to review.

Q. Ian Affleck (UFV). Will be using WeBWorK locally at UFV. What can institutions do to integrate into the broader WeBWorK community?

A. Clint L. Some ways can be to join the Slack group in North America, host get-togethers, technical channel meetings. If there is interest even creating a local BC community

Q. Justin Gary (SFU). There is attraction if open homework systems have close alignment with textbooks. Is there any grants for creating homework problems tailored and aligned to open source textbooks?

A. Clint L. Nice to have. Hope BCcampus can do more.

Q. Erin Beveridge (UNBC). At UNBC cannot make WeBWork work properly. Using Rederly. Can content be used from Rederly to WeBWork? Will it work in WeBWork?

A. Clint L. Not sure. Should work.

**Comments:**

Bruce Dunham(UBC-V). WeBWork is based on old programming language Perl. WeBWork has been integrated into CANVAS and working well with a lot of support from IT.

Clint L (BCcampus). WeBWork community has integrated with many LMS's.

Kseniya Garaschuk (UFV). WeBWork is not integrated into BlackBoard. No single sign in. Instructors have to upload class list.

Q. Stephen Brown (Okanagan College). How well did IMathAS fare in the choice of an Open Source Homework (OSH) System?

A. Clint L. In evaluation of the three Open Source Homework (OSH) Systems (WeBWork, IMathAS and Numbas), WeBWork had the leading edge due to the larger support community.

**Comments:**

Bruce Dunham(UBC-V). System administrators feel nervous when dealing with open source. At UBC WeBWork has worked great with a lot of support from IT.

Michael Nyenhuis (KPU). WeBWork is difficult in setting it up initially, but works very well for many years with no problems.

Wayne Nagata (UBC-V). Issues with WeBWork scalability. When used for testing there was an instance where exams went missing. Situation was rectified with makeup exams.

Clint L. (BCcampus). Have heard both scenarios, from “crashed and burned” to “worked very well”. WeBWork is based on old technology, not built for cloud based services and there is some hesitation from institutions.

### **5.3 PIMS – David Leeming**

- David expressed his appreciation on having PIMS on the BCcupms agenda.
- There are twelve members in BC and four in Alberta.
- Talked about the mandate which is to promote research in and applications of the mathematical sciences, to facilitate the training of highly qualified personnel, to enrich public awareness of and education in the mathematical sciences and to create mathematical partnerships. There is no annual fee.
- The 2021 PIMS Education Prize (who has made a significant contribution to education in the mathematical sciences) was awarded to Dr. Bruce Dunham.
- The COVID pandemic affected outreach activities.
- Asked committee members for any outreach activities. Diversity in Math Conference 2020 (joint with SFU/Math). In support of High school students from underprivileged and under-represented committees. Three-year NSERC grant.

### **5.4 Adult Basic Education – Costa Karavas**

- Costa Karavas (VCC) went over the purpose and goal of ABE articulation which is to ensure students have access to upgrading courses, receive appropriate credits and able to transfer easily among publicly funded colleges, universities and institutes in BC.
- The ABE committee articulates courses in various subjects and levels against well-defined learning outcomes contained within the ABE Articulation Handbook. This handbook is published each year by the Ministry of Advanced Education and is available on the web.
- The highlights of the 2021 ABE Math articulation meeting (March 2021) were Effects of Pivoting to Online Learning due to COVID-19 and how that has affected enrolments, assessments and learning; reviewing learning outcomes of the provincial Calculus course; creating a course that would mimic the high school Foundations of Math 12.

### **5.5 Changing the Culture (Friday, May 14, 2021) – Malgorzata Dubiel.**

- Cancelled in 2020 due to COVID-19.
- Scaled down to 150 registered for the May 14, 2021 Conference.
- There is discussion on changing the title of the conference from “Changing the Culture”

Break for Lunch at 12:15 pm.

## **6. Institutional Reports -highlights**

Institutions in alphabetical order outlined highlights from their institutions.

## **BCcupms Meeting – Day 2 Thursday, MAY 13, 2021.**

The chair shared the agenda for Day 2, opening the meeting by welcoming the participants.

## **7. Committee Business**

### **7.1 Webmaster's Report**

- Ian Affleck (UFV) mentioned that some limitations to the website are due to the initial layout and design about 15 years ago. Suggested if there is any desire to update the design and hosting of the website. Currently there is no funding to support this.
- Susan Chen (Camosun College) suggested to include a link on Open Educational Resources on the BCcupms website.
- Gary MacGillivray (UVIC) suggested to include in the institutional report template a commentary on the use of OERs.
- Andrea Hyde (COTR) suggested that perhaps the hosting institutions pay the website hosting fees every year.
- Leo Neufeld (Camosun College-retired) mentioned that it would be a big burden for the committee to tabulate and keep up to date resources and material on the Bcupms website.
- Asia Matthews (Quest University Canada) suggested that institutional reports can be submitted using Google Forms as a survey.
- Costa Karavas (VCC) demonstrated a Moodle hosting environment of another articulation committee as an alternative option for the BCcupms website.
- Stephen Brown (Okanagan College) volunteered to assist with WordPress.com
- Group open access to the content and materials on the BCcupms website was favoured from the majority of the articulation members.

### **7.2 Report from Nominating Committee and Election(s)**

An update from the nominating committee was provided resulting in two calls for nominations. The selection of the candidates was done by using random number generator rather than by election. i) Call for nominations for the Secretary. After three

calls, the sole nomination was Costa Karavas, who was thereby acclaimed for a two-year cycle; ii) Call for nominations for Vice Chair. After three calls, the sole nomination was Jane Butterfield who was thereby acclaimed for a second term.

### **7.3 Proposed location, dates, agenda items for 100<sup>th</sup> meeting: UBC?**

-Wayne Nagata (UBC-V) talked about a challenge for finding a room for a large group 60+. There is a lot of activity occurring at UBC in the summer.

-Ian Affleck (UFV). There is a lot of time until next year to explore this option and others. Dates were suggested for May 17-18, 2022 as core dates. Committee was asked for agenda items for next year's meeting:

- Gary MacGillivray (UVIC). What can we bring back into face-to-face teaching from our experience in online teaching.

-Jane Butterfield (UVIC): In case of a hybrid model for next year's meeting, there are always issues that can be missed due to technology, but will do everything possible to make a remote meeting run smoothly.

### **7.4 Proposed location for our 101<sup>st</sup> meeting**

Asia Matthews (Quest) volunteered Quest University Canada in Squamish, BC to host the 101<sup>th</sup> meeting in 2023, but needs to be confirmed. Any other institution that is willing to host can also contact the committee.

### **7.5 List Updates**

For any Listserve email updates, contact Gary MacGillivray for Math, [gacgill@uvic.ca](mailto:gacgill@uvic.ca) and Susan Chen for Statistics, [chen@camosun.bc.ca](mailto:chen@camosun.bc.ca)

## **8. Matters Arising from 98<sup>th</sup> Meeting**

### **8.1 Flexible Pre-Major**

-Ian Affleck (Chair/UFV). BCCAT is not updating the Flexible Pre-Majors on its website.

- Gary MacGillivray (UVIC). Suggestion to include in the BCCAT website a list of links from the various institutions leading to their math majors and relative information.

-Justin Gray (SFU). SFU has five major programs and links to where users can find the current relative information.



-Deanna Baxter (Capilano U.) Information should be included on the BCCAT website in general to influence students in studying mathematics.

-Justin Gray (SFU). The BCCAT webpage can have a page with the required core courses and pointing to the institutions with their individual programs.

-Susan Feldberg (TRU). BCCAT info is good to have so students can see what is currently being offered.

-Justin Gray (SFU). Continue to use the BCCAT and have a disclaimer. By having links pointing to the various institutions' majors can inform prospective students about the various math majors offered.

-Erin Beveridge (UNBC). Where can the recommended new Flexible Pre-Major page be put?

-Anabella Chun (BCCAT). Will see where and if it will be placed on the BCCAT website.

- Gary MacGillivray (UVIC). Suggested to have a survey for institutions with information about their math major programs for BCCAT. The survey information can collect links to department websites, academic calendars and math programs.

-Ian Affleck (UFV). Every institution can check at least annually for relevant information and working links.

-Justin Gray (SFU). Volunteered to create a Form for the survey

-Ian Affleck (UFV). Mentioned also to include along with math majors, minors, certificates, etc.

-Natasha Davidson (Douglas). Why did BCCAT abandon the upkeep of the Flexible Pre-Major? It seems that we are duplicating the work that already exists.

- Anabella Chun (BCCAT). Hard to maintain it every year. Not many students go to the Flexible Pre-Major page.

-Ian Affleck (UFV). Leave it up to the institutions to put forward what they want to include such as minor programs and have the survey more open.

-Andrea Hyde (COTR). Would be very useful to include a list of institutions that offer math/science programs and the names of each program and a link to the academic calendar.

-Anabella Chun (BCCAT). Shared screen of the transfer guide and demonstrated the new course to course which now includes international institutions. BCCAT will be updating and refreshing the look of the transfer guide website. Also mentioned that BCCAT has a YouTube channel.

15 minute Break

## **9. Math Breakout Discussion**

### **9.1 Remote teaching – lessons learned in 2020-2021**

#### **9.2 Math/Stats help centres**

-Jane Butterfield (UVic). Creation of an email list can provide the means for instructors connecting and sharing their experiences with lessons learned from math/stats centres. A variety of platforms and technologies were used (BlackBoard, ZOOM, by appointment, Facebook, Bluejeans, Piazza, etc).

-Suzanne Feldberg (TRU). Spent more time per student.

-Erfan Zahrai (Coast Mountain College). Asked how did students share their work, that did not have the appropriate technology?

-Kseniya Garaschuk (UFV). Suggested miro.com as online collaborative whiteboard platform.

-Justin Gray (SFU). For math workshops, were working in small groups and work on specific problems with guidance.

-Eugene Belchev (Langara College). Pre-designated ZOOM rooms. Worked very well. Thinking of continuing this for the FALL 2021.

#### **9.3 WeBWork**

-Natasha Davidson (Douglas College). Server installation in Summer 2021.

- Wayne Nagata (UBC-V). Used a lot for homework. Infinite number of tries for homework. Used it also for tests but had technical issues. No way to prevent cheating.
- Michael Nyenhuis (KPU). For homework infinite number of tries. Some instructors favoured two tries rather than infinite number of tries.
- Eugene Belchev (Langara College). Applied for grant, planning to use only for homework, not for testing.
- Justin Gray (SFU). LON-CAPA for many years, gradually phasing it out. As an open-source software, minimal support from a small group. Upgrade to 3.0 was never developed. Some concerns were expressed of implementing open-source. Mobius has been very reliable and inexpensive for students; about \$25/year.
- Natasha Davidson (Douglas College). The bottom line is to help students learn and not only to test them.
- Patrick Montgomery (Camosun College). Inability to integrate with LMS, support for students not really available, ease of use for faculty to create and change questions, not supported adequately. If we can keep the costs down of publisher's platforms then this can minimize the friction points with WebWork.
- Ian Affleck (UFV). Have negotiated with publisher, creation of a custom text and reasonable pricing.
- Kseniya Garaschuk (UFV). Publishers should commit for a certain amount of years.
- Asia Matthews (Quest) . Suggested Perusall.com
- Wayne Broughton (UBC-O). Asked if you use Lockdown Browser with WebWork tests? We have Lockdown integrated with Canvas and used it that way for tests and the final exam. UBCO Senate has now passed a policy that does not allow requiring paid online homework systems (e.g. publisher systems) for assessments, unless special exemption is granted by the Dean.
- Eugene Belchev (Langara College). Cannot match in terms of number of exercises when comparing WebWork with a publisher's question bank. Publishers have the leading edge.

#### **9.4 Marking**

- Justin Gray (SFU). Grading online using Crowdmark. Saves a lot of time. Will continue even after the pandemic.
- Jane Butterfield (UVIC). Encourage UVIC to continue paying for the service. Posted a question on the ability students can have to view their Final Exam.
- Eugene Belchev (Langara). Asked if Crowdmark can handle multiple versions of tests? Langara exploring Crowdmark.
- Wayne Broughton (UBC-O). Used Crowdmark, Speedgrader. Each have their advantages and disadvantages.
- Ian Affleck (UFV). Asked if Crowdmark works well when students submit photos and scanned images.

#### **9.5 Delivery plans for the Fall**

- Eugene Belchev (Langara). 30% of classes are scheduled online for the Fall. Could be issues arising if students are taking back-to-back classes that are online and face-to-face classes.
- Justin Gray (SFU). After the pandemic is over, online classes can be suitable for students rather than have students commute long distances.
- Michael Nyenhuis (KPU). Last term we conducted a short survey to see what students thought of online courses. The response rate was not high, the sample was self-selected. The data showed that there is not inconsiderable interest in online courses.
- Suzanne Feldberg (TRU). Both modes of delivery were preferred.
- Ana Culibrk (Columbia College). Faculty prefer hybrid model. Tests in class to avoid cheating.
- Natasha Davidson (Douglas College). Survey conducted from the student union on online learning showed there were complaints from students, feelings of loss of connection, felt they can perform better with face-to-face classes.

- Kseniya Garaschuk (UFV). Concerning the course Math for Teachers, many students expressed that they wouldn't be able to take the course if it wasn't offered online due to life constraints.

- Michael Nyenhuis (KPU). Thinking of more courses being offered online.

-lan Affleck (UFV). International student interest is higher in business rather than science courses.

### **9.6 Academic Misconduct**

-Natasha Davidson (Douglas College). The more we focus on this issue, we get displaced from students who value learning and what our purpose is. Are we "guards" or faculty? It interferes with our energy in being facilitators of learning.

-lan Affleck (UFV). Hard to be a coach and referee at the same time.

-Deanna Baxter (Capilano U). Emphasis can be placed in minimizing cheating. Creation of open-ended questions. Creation of exercises that cannot be searchable using online websites.

### **10. Stats Breakout Discussion (see Agenda posted at [www.bccupms.ca](http://www.bccupms.ca))**

Some highlights are:

-Thanked outgoing Secretary Michael Lo (Langara). New Secretary is Andrea Hyde (COTR).

-Refer to Bruce Dunham (UBC-V) any contacts we have for training in Statistics.

-Attempts to engage students in Statistics

-Assessments and academic misconduct.

-Open access resources

-Open book exams. More authentic exams (assessments) are needed. Students can use resources and R on exams.

-Annually updated Statistics resources.

45-minute Lunch Break

### **11. New Business**

#### **11.1 Highlights from parallel sessions (see 9 and 10 above).**

## 11.2 Transition from high school (postponed to 13.2).

### 11.3 Indigenization of post-secondary Math/Stats curriculum

- Ian Affleck (UFV). For next year's meeting at UBC, might be a good idea to bring in a guest speaker. Host institution can provide the honorarium.
- Various resources were brought forward:
- Zahra Mahyari (Acenda). <http://www.fnesc.ca/wp/wp-content/uploads/2015/09/PUB-LFP-POSTER-Principles-of-Learning-First-Peoples-poster-11x17.pdf>
- Patrick Montgomery (Camosun College). <https://opentextbc.ca/indigenizationcurriculumdevelopers/>
- Justin Gray (SFU). <https://www.lib.sfu.ca/help/academic-integrity/indigenous-initiatives/icrc/indigenous-knowledge#indigenous-ways-of-knowing>
- Jane Butterfield (UVic). <http://www.fnesc.ca>

### 11.4 Sessional instructor "sharing"

- Ian Affleck (UFV). Sessional instructors who may not have work in one institution can have employment at another institution. Discussion on hiring process and HR postings.
- Suzanne Feldberg (TRU). PhD hires may not be the best suited and qualified to teach service courses. Non-PhD are typically more qualified.
- Justin Gray (SFU). Would be nice to have a way to have some reference to see postings on a regular basis.
- Natasha Davidson (Douglas College). The BCCUPMS website can be such a place with links to the postings.
- Deanna Baxter (Capilano U). Capilano requires PhDs from now on.
- Ian Affleck (UFV). Sessional instructors without PhDs working consistently might not be eligible for hire elsewhere if a PhD is required. Reminded members to send their institutional postings to the BCCUPMS listserv [bccupms.lists@uvic.ca](mailto:bccupms.lists@uvic.ca) and then the members can forward the listserv postings to their sessional instructors appropriately.

### 11.5 Upper-level course sharing

- Doug Henderson (Selkirk College). Sharing upper-level courses between institutions has occurred. The idea is if each institution has a few students in a course then two institutions can share the number of students and teach

accordingly. Ian Affleck (UFV), Bruce Dunham (UBC-V) and Gary MacGillivray (UVIC) expressed about various ideas on how this can occur.

### **11.6 Final Exam weighting**

-Andrea Hyde (COTR). Had the ability to change weighting because of COVID year.

-Discussion on weights from various institutions ranged from 30% - 50%.

- Gary MacGillivray (UVIC). For articulation transfer sometimes it is requested to also submit copies of exam.

## **12. Reports**

### **12.1 BCAMT - representative Susan Robinson, BCAMT president**

-Ian Affleck (Chair) introduces Susan Robinson.

- Susan mentioned that all work they have done is online due to COVID. Made reference to a virtual conference the past Fall and this Fall.

- The work they do is to support teachers in professional development, outreach and webinars.

- The high school Quarter (two courses at a time, 4 quarters, each quarter is 10 weeks and 38 classes in each quarter) and Octet (1 class-5 weeks every day, 22 days of one class, no other class during this time period) systems of teaching have received mixed reviews. Teaching three hours before lunch and three hours after lunch is difficult for the students to learn, focus and absorb what is being taught. Students are lacking processing time.

### **BCcupms Meeting with Public School Teachers**

Rebecca Mueller (Burnaby and Coquitlam school districts)

Marlee Fisher (Chilliwack School District)

Leeanne Bartel (Chilliwack School district)

Main highlights:

-Managed to finish all course(s) materials as there were no field trips and other activities due to COVID.

- Precalc 12 was taught under the Quarter system. Two lessons per class, very little processing time for students. Did their best and some may have challenges when they enter university.

- The octet system is draining for students and teachers for math. Some content was adjusted to manage. Big gap for some students taking high school math until the next time they take math in university.

-Susan Robinson (BCAMT). For Calculus 12, some teachers emphasized less transcendental functions. This spring, teaching was much better than last spring during the onset of the pandemic, where teachers had to interrupt and adjust and transition to online.

-Ian Affleck (UFV). Encouraged teachers to give advice to post-secondary institutions on math issues.

### **12.2 BCSSMC - Suzanne Feldberg**

- Gary MacGillivray (UVIC) thanked Suzanne for serving four years as vice chair.

No activities were performed for two years because of the pandemic. The dates for next year are April 6, 2022 (preliminary round) and May 6 (Final round). Still need to do the answers, solution sets. The questions are already compiled. Asked for feedback from secondary school teachers on material used in the BCSS math contests.

<http://mathcontest.sites.tru.ca>

### **12.3 Math Challengers - Leo Neufeld**

- Math Challengers (MC) is a competition for Grade 8, 9 and Grade 10 students who love math and excel in doing it. This year about 785 students participated at the Regional level. Grade 8 teams came from 27 different schools, Grade 9, from 27 schools and Grade 10, from 25 schools. Students are also permitted to register as individual competitors.

The delivery of the competition was drastically modified for 2021:

- No registration fees for schools or for teams
- Written stages were done in schools, not at a Regional site
- Coaches/volunteers were asked to mark the papers and send in the results
- The Face-Off Stage was open to all competitors and run using a Zoom and Excel
- Competitors were not identified by name
- No actual Provincial Finals — Provincial recognition was extrapolated from Regionals

- Plaques will be awarded, rather than trophies, to top individuals and schools this year. Medals for Finalists, the top ten students in each pool, will be awarded, as will the PIMS Medal, recognizing the top student in each grade from a participating school on Vancouver Island.

- What happens in 2022 is still undetermined. The Math Challengers Society appears willing to repeat this year's format, if on-site delivery is not possible. Having the MC



competition run in schools gives access to any school in the Province, but advertising and supporting it then becomes more centralized.

- Regions, besides the main competition site on the Lower Mainland, are Vancouver Island, in the Okanagan, the Fraser Valley and Prince George. Organizers are Satoshi Tomoda (Okanagan), Kseniya Garaschuk (UFV) and Erin Beveridge (UNBC). Colleges and universities are ideal sites for hosting MC. New start-ups are we welcome from anywhere in the Province.

#### **12.4 Calculus Challenge Exam - Wayne Nagata/Justin Gray**

-Held in June in high schools and successful students can get credit for first year calculus in the participating universities. There was no exam last June 2020 and June 2021 due to the pandemic. Anticipate a return in 2022. UBC-V is the sole institution for the Calculus Challenge Exam as SFU is no longer hosting but a participating institution.

Considering doing the following with the CCE each year.

(a) Releasing a CCE 1 to all schools, to be written by any interested student and used by any interested teacher. For example, teachers could: use this as their own exam; use it as an illustration of UBC calculus exams; give it to their students as a practice exam; or selectively pull problems from it.

(b) Releasing a grading guide to the CCE 1 to any interested teacher.

(c) Running a CCE 2, similar in structure and difficulty to the CCE 1, in the manner that the Calculus Challenge Exam has traditionally been run, and for the same stakes (course credit at a participating institution).

### **13. Open Discussion**

#### **13.1 Impact of COVID-19 on 2020-2021 school year**

Discussion on challenges that the COVID pandemic had in the high school system. Teachers asked if students were prepared in university in Fall 2020. Post secondary institutions really cannot determine this.

-Bruce Dunham (UBC-V). Students do not retain information when taking short duration courses versus normal length courses.

- Gap knowledge has increased, students and teachers have increased anxiety, students encouraged to attend tutorials online to fill in gaps.

-All type of math competitions had low participation. One reason for this is the Quarter and Octet systems the high schools implemented.

**13.2 Transition from Grade 12 new curriculum to post-secondary, Fall 2020**

- Dan Henschel (Douglas College). Asked if there will be students from high school that would have taken the new high school courses such as Statistics 12 and Geometry 12.
- Susan Robinson (BCAMT). Not too many as many smaller schools these new courses are not offered.
- Teacher's attitude plays a big role in generating interest of offering a new course in a high school.

**13.3 Further topics to be suggested by teaches and/or representatives**

- None.

**14. Adjourn**

The Chair thanked Susan Robinson (BCAMT) and all the high school teachers who attended and everyone for their participation.

**Motion: To adjourn the 99th BCcupms meeting. M- Costa Karavas (VCC), S- Paul Ottaway (Capilano U.)**

**Approved – consensus**

Meeting adjourned at 18:02

\* Dave Mitton, representative from Langara College and former Vice Chair of the BCCUPM, passed away March 5, 2021.\*

**Attendee List**

<b>Institution</b>	<b>Last name</b>	<b>First name</b>
Acsenda School of Management	Banerjee	Partha
	Mahyari	Zahra
Alexander College	Subedi	Krishna
BC Institute of Technology	Jolfaee	Simin
	Merchant	Sandi
Camosun College	Montgomery	Patrick
Capilano University	Anderson	Marsha
	Ottaway	Paul
Coast Mountain College	Zahrai	Erfan
College of New Caledonia	Wall	Tracy
College of the Rockies	Hyde	Andrea
Columbia College	Culibrk	Ana

Corpus Christi College	Maghzian	Hamid
Coquitlam College		
Douglas College	Henschell	Dan
	Oesterle	Susan
Fairleigh Dickinson University	Bazargan	Amirhossein
Fraser International College	Alaei	Navid
Kwantlen Polytechnic University	Nyenhuis	Michael
	Macleod	Colin
Langara College	Belchev	Eugene
	Lo	Michael
North Island College	Cameron	Jeannie
	Ward	Natalie
Northern Lights College	Cui	Hongbin
Okanagan College	Brown	Stephen
	Hurtubise	Claude
Quest University	Matthews	Asia
Selkirk College	Henderson	Doug
Simon Fraser University	Gray	Justin
	Perera	Harsha
Thompson Rivers University	Feldberg	Suzanne
	Pardoe	Iain
	Shaikh	Mateen
Trinity Western University	Pimentel	Sam
University of BC Okanagan	Broughton	Wayne
University of BC Vancouver	Dunham	Bruce
	Nagata	Wayne
University Canada West	Le	Nam
University of the Fraser Valley	Affleck	Ian
	Garaschuk	Kseniya
	Mimmack	Gillian
University of Northern BC	Beveridge	Erin
University of Victoria	Bigelow	Dave
	Butterfield	Jane
	MacGillivray	Gary
Vancouver Community College	Kakushkin	Gabriela
	Karavas	Costa
Vancouver Island University	Bigelow	Dave
Yorkville University	Singh	Mandev
Undetermined/Retired	Neufeld	Leo
	Dubiel	Malgorzata