Minutes of the 97th Meeting, May 14th - 15th, 2019
College of the Rockies

Version: November 19, 2019 Draft

Tuesday, May 14, 2019

Plenary Session

1. **WELCOME**
   Darrell Bethune, Dean of Business and University Studies, College of the Rockies, welcomed the
   BCcupms to its 97th meeting at College of the Rockies.   9:00

2. **ADOPTION OF THE AGENDA FOR THE 97TH MEETING OF THE BCCUPMS**
   The agenda for the 97th meeting was approved by consensus after agreeing to the following change:
   Addition of item 5.3: Remembering Betty Kennedy – David Leeming.

   > **Motion:** (moved by Suzanne Feldberg and seconded by Gary MacGillivray)
   > **That the Agenda for the 97th Meeting be approved as ammended.**
   > **Approved by consensus**

3. **APPROVAL OF THE MINUTES OF THE 96TH MEETING HELD AT CAPILANO UNIVERSITY**
   > **Motion:** (moved by Suzanne Feldberg and seconded by Wayne Broughton.)
   > **That the Minutes of the 96th Meeting be approved without changes**
   > **Approved by consensus**

4. **ANNOUNCEMENTS**

   4.1 **Announcements from the host:** Andrea Hyde gave the committee information about
   internet access and meal options for the meeting.

   4.2 **Introduction of representatives.**

   4.3 **Attendance lists:** Suzanne Feldberg circulated the attendance lists.

   4.4 **BCcupms: 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: Jane Butterfield, Ana Culibrk, Gary MacGillivray,
   and Susan Oesterle volunteered to form the nominating committee.

   4.5 **Conferences:** Members brought the following upcoming conferences to the committee's at-
   tention.
   CMS Summer meeting in Regina (June 7 - 10). https://summer19.cms.math.ca/
   Changing the Culture (May 17). https://www.pims.math.ca/educational/changing-culture
   CMESG (May 31 - June 4). http://www.cmesg.org
   Stats Society of Canada annual conference in Calgary (May 26 - 29). https://ssc.ca/en/
   meeting/annual/2019

5. REPORTS
<div align="right">9:15</div>

5.1 **Ministry of Education** – no representative was available this year, but they have sent a presentation. For questions, please contact Angie Callenberg at

    5.1.1 **BC Ministry website:**

        https://www2.gov.bc.ca/gov/content/governments/organizational-structure/ministries-ministries/education

5.2 **BCCAT** – Dr. Fiona McQuarrie, Special Projects Coordinator

    5.2.1 **Flexible Pre-Major:** (See posted document at www.bccupms.ca).

        For a student to actually transfer with a flexible pre-major, there needs to be a member of the sending institution as well as a member of the receiving institution who knows about and understands the flexible pre-major. BCCAT considers the current practice to be unsustainable, and has three recommendations they would like articulation committees to consider. Those recommendations are on pages 3 and 4 of the posted document. They are certainly not the only courses of action; if articulation committees come up with a different solution that is of course fine too.

            Action item: This will be discussed tomorrow during the Math Parallel Session.

    5.2.2 **BCCAT: International Course Transfer Database initiative.**

        Last Monday, UBC's internal transfer guide became available to the public. https://students.ubc.ca/enrolment/registration/transfer-credits/search-tool Douglas College has expressed an interest in doing the same thing, and BCCAT will be working with them next. It is BCCAT's hope that more institutions will do something similar.

    5.2.3 **BCCAT: Engineering Common Core project.** (See posted link at www.bccupms.ca). This report has now been completed and published, and is available at https://www.bccat.ca/articulation/arts/engineering.

    5.2.4 **BCCAT: 2018 and 2019 JAMs.**

        This is BCCAT's 30th anniversary. In honor of this event, special events will be scheduled for the 2019 JAM.

    5.2.5 **BCCAT: Pending Requests in the Transfer Credit Evaluation System (TCES).** Please see the list of pending requests in the meeting folder.

    Other activities and events that Fiona McQuarrie brought to the attention of the committee: EducationPlannerBC is no longer being run by BCCAT, and is now being run by a not-for-profit organization. BCCAT has developed a policy on respectful behaviour BCCAT is undertaking a research study on students who have taken dual-credit courses in high school: are they more likely to attend the post-secondary institution at which they took the course? how do those students' performance in post-secondary compare with students who did not take a dual-credit course?

5.3 **Remembering Betty Kennedy** – David Leeming.

    David Leeming said a few words to commemorate Betty Kennedy, the first secretary of the BCCUPMS, who passed away at the age of 96 last month.

5.4 **PIMS**—David Leeming.

    David Leeming reported on the various educational outreach activities run this year by the PIMS Education Associates. He particularly put out a call for institutions who are interested in participating in the Canadian Math Kangaroo Contest; please contact David for more information. https://kangaroo.math.ca

Please see the full report on page 17 for details, and contact David Leeming if you are interested in making your institution a PIMS Education Associate.

5.5 ABE—Costa Karavas.

5.6 Changing the Culture. Please register in advance: Friday, May 17, 2019.

6. Institutional Reports

11:25

acsenda school of management – No representative sent

alexander college – Krishna Subedi

bc institute of technology – Simin Jolfaee

At BCIT we haven't had any major changes to our programs and courses that would affect our articulation activity. The enrollment numbers have been steady and growing, especially in computing programs, which have been expanded and include new intakes at the downtown campus.

camosun college – Patrick Montgomery

The Department of Mathematics and Statistics at Camosun College has seen relatively stable enrollment this year, with a slight overall decrease of 1.7%. The only identifiable trend is that the decrease is likely attributable to a drop in enrollment for our tuition-bearing ABE courses which are now offered tuition-free through the school districts (both in house and through distance education). To adapt to this change in government policy, two advanced level ABE courses (MATH 135 – advanced business, and MATH 137 – advanced algebraic) have been revised and re-articulated as MATH 075 and MATH 077. In addition, a section of provincial level algebra and trigonometry (Precalculus), MATH 097, has been introduced and articulated on the ABE grid. All three of these courses will commence in Fall 2019. The only other change to our courses this year affected the Engineering Transfer Program, which now uses a more applied version of linear algebra, MATH 251 (matrix algebra for engineers). Staffing levels have experienced a slight growth as two members with part-time continuing appointments were increased to full-time.

capilano university – Paul Ottaway

Enrollment in Math and Stat courses has increased slightly due to a sharp increase in international students and a slight decrease in domestic students. The School of STEM is continuing the process of developing multiple Bachelor of Science degrees. A General BSc is slated to have its first intake in Fall of 2020. Students will be required to select two concentrations from the following list of three: Biomedical Science, Clean Technology, Computational Science (which covers a range of topics from Math, Stats and Comp Sci). Additional BSc degrees will be available in the following year (Fall 2021) with majors in Data Science, Applied Clean Technology and Life Science. In conjunction with these degrees, many upper year courses are being developed with Math, Stats and Comp Sci most directly contributing to the Data Science major. For some of our upper year offerings, we are considering using the "DATA" prefix for courses that are interdisciplinary in nature though they will be housed in the Department of Computer and Data Science. The mathematics department also plans to revisit the outline, content and learning outcomes for Math 108 / Math 109 (Calculus 1 and 2 for Life Science, Social Science and Business) to better serve students in these programs while maintaining articulation. We have hired four new members to the department this year: Amir Amiraslani (regular, permanent), Mahta Khosravi (regular, permanent), Peter Sinclair (1 year contract) and Danielle Wills (sessional). If enrollment continues to increase at the current pace, we expect an additional hire may be needed as early as next year.

COAST MOUNTAIN COLLEGE – Erfan Zahrai

	Fall Semester	**Winter**
Terrace	Math 101 Calculus I	Math 102 Calculus II
Terrace	Math 131 Introduction to Statistics	Math 131 Introduction to Statistics
Terrace		Math 235 Linear Algebra
Rupert	Math 101 Calculus I	Math 102 Calculus II
Rupert		Math 131 Introduction to Statistics
Video Conf.		Math 115 Precalculus
Online	Math 190 Mathematics for Elementary Teachers	

COLLEGE OF NEW CALEDONIA – Tracy Wall

COLLEGE OF THE ROCKIES – Andrea Hyde

In the 2018/2019 year, the increase in international students continued to be a challenge at College of the Rockies, but there have been a number of systems implemented to improve the experience for students and instructors. We've opened up smaller sized sections exclusively for international students, and set up paired sections where there are a designated number of seats for international and domestic students in any given classroom. In general, it seems that the increased screening of math and English has lead to better performance in the classroom. International students are now required to arrive in May for orientation to give them time to acclimatise to Cranbrook and find housing, work etc. before trying to settle into classrooms full time.

We have been considering offering a blended pre-calculus and calculus course where students would learn the skills from pre-calculus (trig functions, for example) and then immediately learn the related calculus concepts. In a perfect world, the course would run in the same time block as calculus so that students could easily move to the blended course if they needed to.

Finite Math 2 (Math 102) is on the table to change into a discrete math course. We are working towards a first year computer science program and plan to use Math 102 to fulfil the mathematics requirement in that program. We are still in the research phase of that process and will be working on it over the summer with plans to offer it starting in Fall 2020.

We completed work on a second Math for Teachers course (Math 107) that we are offering in the Winter 2020 semester. We moved some material from the first Math for Teachers course (Math 105) to Math 107 and expanded on the material with a particular emphasis on indigenization in both of the courses.

COLUMBIA COLLEGE – Ana Culibrk

COQUITLAM COLLEGE – Gera Belchev

There are no course changes in the past year. The student enrolment is strong.

DOUGLAS COLLEGE – Natasha Davidson

KWANTLEN POLYTECHNIC UNIVERSITY – Michael Nyenhuis

Kwantlen has no changes to courses. Enrolments have been steady, at least in the math department. Some of you may have heard about KPU's financial problems. We have been required to cut courses for the next few terms. This term we cut all that was debatably fat, so the next cuts will be difficult.

The B.Sc. in Applications of Math is doing well. I believe we have about 30 students in it. We will be graduating about 5 students in June.

LANGARA COLLEGE – Eugene Belchev

Last year the department went through a Program Review exercise. No new courses were added, though as a result of the review, the learning outcomes of the existing ones were somewhat modified and therefore in need for re-articulation.

Due to recent retirements as well as increase in demand, we hired several new instructors in all of the subareas of the department.

There was a significant drop in enrollment during Spring because we did not bring in as many international students as before. But for Summer their number has been brought back to previous numbers and we even managed to increase domestic registration, thus overall numbers remain stable.

The Engineering Transfer program continues to be quite popular. We have been running MATH 1252 , Linear Systems with Applications, since Spring 2014 as part of the Engineering timetable. This course (which incorporates biweekly MATLAB labs) was designed to meet the learning outcomes for a first year Engineering Linear Algebra course.

The new PDD program in Data Analytics was launched in January 2019. There are two intakes a year Ð January and September. It runs as cohort with 30 students each. The program has 46 credits and is a collaboration among Math & Stats department, CSIS, English, Business departments. Fall 2019 admission is almost complete with over 190 applications.

As a part of the IUP (Indigenous Upgrade Program) our colleague Sonoko Nakano in consultation with Nora Franzova and Melania Alvarez Aidem (UBC) prepared 26 weeks of a remedial math course to be taught at Musqueam, that would allow students from Musqueam to complete high school curriculum and then transfer to Langara.

NICOLA VALLEY INSTITUTE OF TECHNOLOGY – No representative sent

NORTH ISLAND COLLEGE – Jeannie Cameron

NIC experienced a slight decrease in enrolment in Calculus I/II (MAT 181/182) this year. Finite Mathematics (MAT 151) had a large increase in enrolment, primarily the result of international students taking business programs. Enrollment in Logic and Foundations (MAT 122) is small but stable.

Starting in Fall 2019, NIC will offer Calculus III (MAT 210) once again and Calculus IV (MAT 214) in Winter 2020. Development of Calculus IV was funded by the Office of Global Engagement (IE), and they are also funding the delivery of both courses in the upcoming academic year. Both courses will consist of 3 hours lecture and 1.5 hours of tutorial.

Algebra-based Introductory Statistics (MAT 115/STA 115 Fall 2019) is continuing to offer a section as part of a full four-month Summer term because of the increase in international students.

First year Calculus is using WeBWorK for online math homework. Calculus labs use Geogebra. First year Statistics is going to use the OpenIntro Statistics text for Fall 2019.

NIC again took part in the BC Secondary School Math contest this spring with over twenty students participating from four high schools representing the Comox Valley and Campbell River.

NORTHERN LIGHTS COLLEGE – No representative sent

OKANAGAN COLLEGE – Stephen Brown

Some notable events and information about the Okanagan College department of Mathematics and Statistics are:

- We are a department of now 21 members after hiring another new faculty member this spring and we are spread over 4 campuses. Our Kelowna campus offers a full range of first and second

year offerings with a full set of traditionally off-semester course offerings at the first year level (for example, Calculus I in the Winter semester, etc.). Vernon & Penticton both offer all first year offerings including all traditionally off-semester first year courses. Salmon Arm mainly offers the traditional first year offerings.

- We are very excited to announce that we have received approval to offer a new post-baccalaureate diploma in marketing and data analytics. Our first intake will be Fall 2019. This 2 year program includes 5 new courses in data science along with 3 courses in statistics that are not normally offered at OC (and other courses that we normally offer).

- We have had a substantial increase in international students over the past 2 years – while this has been challenging in some respects, we have had a number of exceptional students as well.

- We continue to host the Math Challengers event for the Okanagan Region. Satoshi Tomoda is the principle organizer.

- We continue to partner with UBCO for the BC High School Mathematics Contest and the Kangaroo Math contest.

- We have a few other outreach projects in mind that may come together over the next year or two.

- In addition to recruitment, we do a lot of retention activities. We have had success converting Biology and Chemistry majors into Biology and Chemistry majors with Mathematics minors. This certainly helps our second year numbers.

- Work is under way on designing a new History of Mathematics course for arts and science students.

QUEST UNIVERSITY – Asia Matthews

We are a non-standard Canadian 4-year undergraduate university. We offer one degree: a Bachelor of Arts and Sciences. In mathematics we offer foundation and concentration courses. We offer most of the "standard" concentration topics (calculus, differential equations, analysis, abstract algebra, etc.). Our Foundation courses are perhaps the most different from the first-year courses at more standard universities. For example, the course I designed and teach is called Mathematics Through Interesting Problems which is an overview of mathematical subtopics (e.g. graph theory, game theory, number theory) with a focus on mathematical thinking and mathematical communication. Every student at Quest is required to take one Foundation math course. We have 4 permanent faculty in mathematics, including one new hire in 2018, and visiting tutors/instructors (approx. 4 per year?) Our enrolment number changes are not statistically significant.

Questions from the committee:
Does Quest accept transfer students? Yes
Is enrollment at Quest competitive? Yes, I believe so.

ROYAL ROADS UNIVERSITY – No representative sent

SELKIRK COLLEGE – Doug Henderson

No new courses were added at the college this past year. Overall enrolment was down across the college, this showed up in math student numbers (typical drop of 5 - 10% from 17 - 18) The one exception to this was our Math 181 class (a problem solving class for non-science majors). The prerequisites were changed from Math 11 to Math 10, which allowed a large number of international students to enroll. This past year the enrolment increased from 10 in 2018 to 69 in 2019.

No new math or stats courses are being added for next year. There may be a second-year added to our engineering programme a few years down the road, which would mean re-introducing some previously suspended second-year courses (Calc III, ODEs).

SIMON FRASER UNIVERSITY – Justin Gray & Harsha Perera

THOMPSON RIVERS UNIVERSITY – Suzanne Feldberg

THOMPSON RIVERS UNIVERSITY (OPEN LEARNING) – Iain Pardoe

Enrolments:
Open Learning enrolments for our undergraduate math courses increased 31% in the last fiscal year (and 6% in the previous fiscal year). Total annual enrolments for the most recent fiscal year are nearly 2200. The majority of these (80%) are continuous enrolment web courses, while 13% represents our single paced online course (MATH 1901: Math for Teachers), and 7% are print courses.
We offer one statistics course (STAT 1201: Introduction to Probability and Statistics), for which enrolments increased 15% in the last fiscal year (and 10% in the previous fiscal year). Total annual enrolments for the most recent fiscal year are just over 700 (93% continuous enrolment web, 7% print).
Courses seeing the largest increases include Introduction to Probability and Statistics, Pre-calculus, Calculus I, Calculus II, and Math for Teachers.

New Math faculty:
Josh Sorge – MATH 1901: Math for Teachers.

New Math Courses:
MATH 1701: Discrete Mathematics. Students are introduced to the foundation of modern mathematics including basic set theory; counting; solutions to recurrence relations; logic and quantifiers; properties of integers; mathematical induction; asymptotic notation; introduction of graphs and trees; finite state machines and formal languages; Boolean algebra.

Revised Math Courses:
MATH 1901: Math for Teachers. Updated to reflect new BC Curriculum for K-9, to add further learning resources including instructional videos and extra practice exams, and to offer an online proctored final exam option using ProctorU.

TRINITY WESTERN UNIVERSITY – No representative sent

UNIVERSITY OF BRITISH COLUMBIA – Wayne Nagata

UNIVERSITY OF BRITISH COLUMBIA - OKANAGAN – Wayne Broughton

UNIVERSITY CANADA WEST – No representative sent

UNIVERSITY OF THE FRASER VALLEY – Ian Affleck

We have a new full-time permanent hire in Statistics – Dr. Ruwan Karunanayaka (PhD. Stats, 2018, SFU).
In February 2019, our department hosted the first annual Fraser Valley Indigenous Math Education Sq'ep. ("Sq'ep" is a Sto:lo word which translates roughly to "gathering".) There were about 70 attendees, from local teachers to UFV faculty to students in our MFEE courses and our Teacher Education Program. Watch for announcements of the second annual Sq'ep, likely to run again as a one day event during the four-day workweek which includes Family Day.
In Fall 2018 our department was invited to run a section of MATH 105 (Math for the Elementary School Teacher) for about 20 students at Nuxalk College in Bella Coola. Stan Manu flew into

Bella Coola for three very busy weekends, and found the experience very enriching and rewarding. Enrolments are reasonably stable, except for a possible downward trend in Science Calculus. Beginning this year we are offering two sections (72 seats) of our Life Sciences streams of Calculus I and II, rather than one section of each.

Our Data Analysis Post-Degree Certificate began a Co-op option this year, where students have access to Co-op summer positions in their third of four semesters. Enrollment in this program appears to be increasing significantly in response.

The Math & Stats Department has adopted WebWorK for Science Calculus (MATH 111 and 112), Science Precalculus (MATH 110), and Discrete Math (MATH 125). We anticipate that Stats and Business Math courses will follow suit in the next few years, and that this will facilitate adoption of open textbook resources for these courses.

UFV is collaborating with Rick Hansen Secondary in a pilot project this May-June to offer STAT 106 (Statistics I) and ENGL 105 (Academic Writing) to two cohorts of Grade 12 students, 24 students each, one cohort specializing in Business Studies and one in Science Studies.

UNIVERSITY OF NORTHERN BRITISH COLUMBIA – No representative sent

UNIVERSITY OF VICTORIA – Gary MacGillivray

We have no changes that affect articulation.

VANCOUVER COMMUNITY COLLEGE – Gabriela Kakushkin on behalf of Costa Karavas

Existing and new courses

The Mathematics Department in the School of Arts and Sciences offers Precalculus (MATH 1020) Calculus I (MATH 1100), Calculus II (MATH 1200), Calculus III (MATH 2251), Discrete Mathematics (MATH 1120), Applied Linear Algebra (MATH 1221) and Introduction to Statistics (MATH 1111).

New mathematics courses are: Ordinary Differential Equations (MATH 2310), Probability and Statistics for Science and Engineering (MATH 2700), Mathematics for Teachers (MATH 1190) and Mathematics for the Arts (MATH 1210).

Pathways to University

First-year certificate programs in Engineering, Computing Science, Software Systems, and Environmental Studies continue to be offered, providing VCC students the option to complete their 1st year courses at VCC and then transfer to SFU and UBC. These certificate programs have increased enrolment in the existing calculus courses.

New VCC programs are in effect in establishing pathways into 2nd year at SFU. Graduates of the VCC UTSC program, who are admitted into the SFU Faculty of Science, may be awarded up to 34 transfer credits to be applied toward the first year of a Bachelor's of Science Degree. Program options are available for the following nine Major areas of study within the Faculty of Science at SFU, Bachelor of Science in: Biological Sciences, Chemistry, Applied Mathematics, Mathematics, Molecular Biology and Biochemistry, Physics, Applied Physics, Biological Physics and Statistics.

Enrolment

Enrolment in the Calculus courses has moderately increased since last year as the certificate programs become popular with UT students.

Enrolment in our Statistics course (MATH 1111) experiences high enrolment as it serves as a core course for many Health Science programs and especially for the BSN (Bachelor of Nursing).

An Associate of Science degree, flexible pre-major in Biology and Associate of Arts degree have gone through the governance process and curriculum development of 2nd year courses have started.

Software

MAPLE and MATLAB software can be accessed remotely by VCC math students and instructors through virtual licenses. This has minimized computer lab dependency.

VANCOUVER ISLAND UNIVERSITY – Lev Idels

YORKVILLE UNIVERSITY – Iqtidar Ali Shah

Yorkville University is a pan-Canadian, private, non-denominational post-secondary institution offering practitioner-based diplomas, bachelor's and master's degree programs in Frederiction, N.B., Vancouver, and Toronto including the Toronto Film School. It began offering a Bachelor of Business Administration degree in BC in October 2016 and currently has 635 on-campus and on-line students from its location in downtown Vancouver. Yorkville became a member of the BC Transfer System last year and currently has 24 agreements with 3 institutions (SFU, Athabasca and Kwantlen) for 14 BBA courses. As part of its BBA degree, Yorkville offers course in Business Mathematics, Business Statistics and Developmental Mathematics.

YUKON COLLEGE – Jaclyn Semple

7. **BUSINESS ARISING FROM THE 96TH MEETING**   14:33

   7.1 **Calculus Core 5-year review.** – Ian Affleck

      A complication arose as the Calculus Core subcommittee reviewed institutions' feedback: some institutions offer only one business calculus course, not two, and it is difficult to compare feedback from institutions of these two types.

      Please complete the survey on behalf of your institution (one response per institution) by May 31st; it is a long survey, so do not postpone. You should answer the questions from the perspective of what your institution currently does or is currently planning to do in the near future, whether or not you agree personally. For each topic you are asked to describe it as *core*, *additional*, or *omit*. Interpret a topic as *core* if you would expect a course that omits it to undergo scrutiny before being articulated, as *additional* if it is a valuable addition that your institution uses to provide breadth, and as *omit* if it is an expendable topic whose inclusion.

      If your institution offers only one Calculus for Business and Social Science course, please leave blank any questions about second-semester topics.

   7.2 **High School Numeracy Assessment.** – Ian Affleck

      The committee reviewed the responses sent by the Ministry representative in response to our questions at the 96th meeting.

   7.3 **Other Business Arising.**

8. **NEW HIGH SCHOOL GRADE 11 & 12 COURSES AS UNIVERSITY COURSE PREREQUISITES.** – Ian Affleck

The Tuesday session of the BCcupms adjourned at 4:25 pm

                    (moved by Wayne Nagata and seconded by Suzanne Feldberg)

BCcupms Meeting with Public School Teachers

9. INTRODUCTION AND OPENING REMARKS.   16:32

The committee welcomed four teachers from Mount Baker Secondary School.

10. REPORTS

10.1 **BCAMT**—Deanna Brajcich (in absentia)

Ian Affleck shared notes that Deanna Brajcich, who was not able to be here, had collected. These were mostly concerned with feedback she had collected from teachers about support, or lack of support, with finding new learning resources for the new curriculum.

10.2 **BC Secondary Schools Mathematics Contest**—Suzanne Feldberg.

COTR has participated in this contest in the past, and they hope to resume it next year. Suzanne Feldberg summarized the results of the latest contest; please see page 18 for the full report.

10.3 **Math Challengers**—Leo Neufeld (in absentia).

Ian Affleck shared the report that Leo Neufeld had prepared:

The format of the event consists of solving math problems individually and in teams with the prospect of trophies, medals and prizes when it's over. Brief talks or other math-related activities are also part of the day. In the final stage, called Face-off, the top ten students compete one-on-on to see who first solves a problem. Parents, coaches and the other competitors thoroughly enjoy the excitement of this elimination round.

All this is possible because of dedicated volunteers and committed teacher coaches, as well as financial assistance from organizations like PIMS, BCHydro, IBM and EGBC. UBC, SFU, BCIT, Camosun College, Okanagan College, UFV and UNBC provide generous competition-site hosting support.

For the Regional competition, besides the main competition site on the Lower Mainland, we also have competitions on Vancouver Island, in the Okanagan, the Fraser Valley and Prince George. Organizers are Satoshi Tomoda (Okanagan), Ian Affleck (UFV) and Erin Beveridge (UNBC, unfortunately no registrants again this year). Colleges and universities are ideal sites for hosting MC. We'd love to see the MC opportunity expanded to include kids in the entire Province. The Kamloops and mid-Vancouver Island regions are prime candidates for becoming new start-ups.

For information about MC:
https://www.egbc.ca/Math-Challengers/Math-Challengers-Home
For previous competition problems:
https://www.egbc.ca/getmedia/5cfa019a-f50b-4a12-97b0-e8ebf020ce71/Quest-Archive.pdf.aspx

10.4 **Calculus Challenge Exam run by UBC and SFU**—Wayne Nagata.

In 2018, 66 wrote the exam and 63 passed. In 2017, 82 wrote, 34 passed, and 2 were caught cheating. Please see https://www.sfu.ca/math/k-12/calculus-challenge-exam.html for more information about this exam, including sample tests and statistics. This exam is a relatively cheap way to earn credit for university-level calculus; there is no risk, and students are not obligated to report their exam score.

Justin Gray added that in recent years only a few students have been reporting the exam for course credit. Although SFU has not tracked this, UBC reported that in 2013 only 5 students claimed credit, in 2014 only 9, in 2015 only 6, in 2016 only 6, and in 2017 only 1. They have also observed that many students who write the Challenge Exam are also writing the AP Calculus exam. Because of this, the SFU Undergraduate Studies Committee has recommended that resources put into running this exam could be better placed elsewhere. This will be discussed at an upcoming department meeting.

Wayne Nagata reported, however, that 31 of the 63 students who passed the exam in 2018 went on to claim credit at UBC, and that UBC will be hosting the exam in 2019. It is possible that students are claiming credit elsewhere; there are a few institutions that recognize this exam.

11. **Discussion on upcoming (Fall 2019) full implementation of new curriculum**

12. **General discussion:** further topics to be suggested by the teachers.

13. **Adjourned to reception at 5:55pm**

(Moved by Natasha Davidson and seconded by Dan Henschell)

Wednesday, May 15, 2019

Plenary Session

14. **Opening remarks** Two minor alterations to the agenda: removal of attendance lists from this   9:00
short morning session (formerly item 14.3), addition of a new item to new business: 17.5 (Impact
of course or department names on articulation).

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(Moved by Ian Affleck Seconded by Suzanne Feldberg)
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     14.1 **Announcements from the host.**

     14.2 **Introduction of representatives.**

Parallel Sessions

15. **Mathematics Session**—Chair: Ian Affleck   9:20

M.15.1. **Attendance lists.**

M.15.2. **Report from the Calculus Readiness Test Subcommittee** — Justin Gray

M.15.3. **Report from the Calculus Common Core Subcommittee** — Justin Gray
This was discussed yesterday (item 7.1). The subcommittee has nothing to report other than
the creation of the survey; they will report on the results of this survey at the next meeting.
Each institution should complete the survey once, and the responses should reflect the general
consensus of the institution.

M.15.4. **Open Educational Resources and Open Texts.**

M.15.5. **Software in Calculus and/or Linear Algebra Courses.**

M.15.6. **Engineering Common Core project** - follow-up from Agenda item 5.2.3 if necessary. (See
posted link at www.bccupms.ca). .

15. **Statistics Session**—Chair: Bruce Dunham   9:30

S.15.1. Approval of agenda.

S.15.2. Approval of the minutes of the Statistics Subcommittee Session of the 96th meeting.

S.15.3. Matters arising from the minutes.

S.15.4. Institutional reports.

S.15.5. Statistics 12: Update on workshops and support for teachers. (Bruce Dunham, UBC).

S.15.6. Use of online, open access resources. (Bruce Dunham, UBC)

S.15.7. International Statistical Literacy Project poster competition. (Bruce Dunham, UBC)

S.15.8. Any other business.

S.15.9. Motion to adjourn.

Plenary Session

16. **HIGHLIGHTSFROM THE PARALLEL SESSIONS** (Details will appear in the minutes.)   11:30

The Stats subcommittee has elected Michael Lo as their official secretary. They have been working for a number of years on a document describing the core content of an introductory stats course, and are now ready to sign off on this document although they do still need to determine its status and clarify its purpose. It should be a useful guide for institutions developing a new course, and could inform articulation to an extent. They discussed recent developments in Data Science programs in B.C. . They discussed free online resources; in particular, merlot.org is a curated repository of available resources. At UBC they have integrated WeB-WorK with R; learn more at https://wiki.ubc.ca/Documentation:WeBWorK/The_WeBWorKiR_Project:_Integrating_WeBWorK_with_R. Bruce Dunham put out a call for submissions of materials to statspace https://statspace.elearning.ubc.ca. At Camosun, the Department of Economics has developed into the Department of Economics, Statistics, & UT Business, which was a surprise to the Department of Mathematics and Statistics. This will is something to bear in mind with articulation requests, and there is a question of whether that department should be invited to send a representative to this committee.

The Math subcommittee heard from Justin Gray about the latest version of the Calculus Readiness Test; if you are interested in using the test at your institution then please contact Justin Gray for more information. Committee members shared information about open educational resources that their institutions have adopted, including textbooks, homework systems, and repositories.

17. **NEW BUSINESS**   13:28

17.1 **Initiatives on Indigenization of Math/Stats programs and/or courses.**

17.2 **Mathematics Flexible Pre-Major.**

The Flexible Pre-Major reports from 2006, 2008, 2011, and 2016 are posted on the BCCUPMS page (the 2016 report is page 32-33 of the 2017 minutes).

Fiona McQuarrie added to that the BCCAT is concerned about how the Flexible Pre-Majors are communicated. Not only would BCCAT like a review of the content, they would like a review of the communication and utility. Does the FPM create a viable pathway that allows students to transfer at the third year?

Gary MacGillivray said that there is in fact no block transfer of credit; thee are all course-to-course articulations.

Bruce Dunham asked whether BCCAT knew how many clicks the FPM document had gotten, because one reason that the Statistics Flexible Pre-Major was created was as publicity for statistics majors. Fiona McQuarrie reported that the number of clicks is extremely small.

The BCCAT would like consensus from the BCCUPMS by the end of December, 2019.

A subcommittee was formed to review the FPM: Gary MacGillivray (chair), Ian Affleck, Natasha Davidson, Andrea Hyde, Wayne Nagata, Mike Nyenhuis.

> **Action item:** the subcommittee will report their findings to the Committee in time to reach consensus for the BCCAT by the end of December, 2019.

17.3 **New High School Grade 11 & 12 courses as university course prerequisites**

17.4 **Student success - International and Domestic.**

17.5 **Impact of course or department names on articulation** – Patrick Montgomery

18. **COMMITTEE BUSINESS**   15:20

18.1 **BCcupms: Webmaster's Report** – Ian Affleck.

Please review the Members page and send any corrections directly to the Webmaster.

18.2 **Report from the Nominating Committee; elections for the Vice-chair and Secretary of the BCcupms if necessary.**

The nominating committee reported that: Suzanne Feldberg accepted the nomination for Vice-chair of the BCcupms and Patrick Montgomery accepted the nomination for Secretary of the BCcupms.

    Call for nominations: three calls for each, and nominations were accepted as recorded above.

18.3 **Proposed agenda items for our 98th meeting.**

18.4 **Date and location of the 98th meeting of the BCcupms:**

May 12–14, 2020 at Trinity Western University.

18.5 **Proposed future dates for BCcupms meetings:**

Year	Meeting Dates	Location
2020	May 12–14	Trinity Western University
2021	May 18–20	Camosun College
2022	May 17–19	Possible Joint AB–BC Meeting
2023	May 16–18	Somewhere in BC Interior?

Susan Oesterle pointed out that 2022 will the the 100th meeting of the BCCUPMS.

18.6 **List updates:**

Please look at our web page

<div align="center">

http://www.bccupms.ca/

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and check that contact information, email, telephone, fax, and address are up-to-date. Please send any corrections to our Webmaster, Ian Affleck.

19. **ADJOURNMENT**

The meeting adjourned at 3:45pm.

            (moved by Andrea Hyde and seconded by Suzanne Feldberg)

Many thanks to Andrea Hyde and College of the Rockies for their excellent work in hosting us for this meeting.

List of Committee members Present

Plenary Session TUE (a.m./p.m.); Secondary Teachers Session (Teach); Plenary Session WED (a.m./p.m.);
Concurrent Math/Stat

Name	Affiliation	TUE	Teach	WED	MATH	STAT
Ian Affleck **(Chair)**	UFV	x	x	x	x	
Mahshid Atapour	Capilano University	p.m.	x	x		x
Eugene Belchev	Langara	x	x		x	
Gera Belchev	Coquitlam College	x	x	x	x	
Deanna Brajcich	BCAMT					
Wayne Broughton	UBC, Okanagan campus	x	x	x	x	
Stephen Brown	Okanagan College	x	x		x	
Jane Butterfield **(Secretary)**	UVic	x	x	x	x	
Jeannie Cameron	North Island College	x	x	x		x
Ana Culibrk	Columbia College	x		x	x	
Natasha Davidson	Douglas College	x	x	x	x	
Bruce Dunham **(Stats Chair)**	UBC Vancouver	x	x	x		x
Suzanne Feldberg **(Vice-Chair)**	Thompson Rivers University	x	x	x	x	
Justin Gray	Simon Fraser University	x	x	x	x	
Doug Henderson	Selkirk College	x	x	x	x	
Dan Henschell	Douglas College	x	x	x		x
Claude Hurtubise	Okanagan College	x	x			x
Andrea Hyde	College of the Rockies	x	x	x		x
Lev Idels	Vancouver Island University					
Simin Jolfaee	BCIT	x	x	x		x
Gabriela Kakushkin	VCC	x	x	x	x	
Costa Karavas	Vancouver Community College					
Susan Kinniburgh	Camosun College	x	x	x		x
David Leeming	PIMS	x		x	x	
Michael Lo	Langara College	x	x	x		x
Gary MacGillivray	University of Victoria	x		x	x	
Asia Matthews	Quest University	x	x	x	x	
Fiona McQuarrie	BCCAT	x		x	x	
Sandra Merchant	BCIT	x	x			
Patrick Montgomery	Camosun College	x	x	x	x	
Wayne Nagata	UBC Vancouver	x	x	x	x	
Michael Nyenhuis	Kwantlen Polytechnical University	x	x	x	x	
Susan Oesterle	Douglas College (SLP)	x	x	x	x	
Paul Ottaway	Capilano University	x	x		x	
Iain Pardoe	Thompson Rivers University Open Learning	x		x		x
Harsha Perera	Simon Fraser University					
Shane Rollans	Thompson Rivers University	x	x	x		x

List of Committee members Present, cont.

Plenary Session TUE (a.m./p.m.); Secondary Teachers Session (Teach); Plenary Session WED (a.m./p.m.);
Concurrent Math/Stat

Name	Affiliation	TUE	Teach	WED	MATH	STAT
Jaclyn Semple	Yukon College	x	x	x	x	
Iqtidar Ali Shah	Yorkville University, BC Campus	x	x	x		x
mandev singh	Yorkville University	x	x	x	x	
Krishna Subedi	Alexander College	x	x	x	x	
Ben Tippett	College of the Rockies	x	x	x	x	
Tracy Wall	College of New Caledonia	x	x	x	x	
Erfan Zahrai	Coast Mountain College	x	x	x	x	

Supplemental Reports

PIMS Report

BC Secondary School Mathematics Contest, 2019

Minutes of the Statistics Subcommittee