

THE BRITISH COLUMBIA COMMITTEE ON THE UNDERGRADUATE PROGRAMME IN MATHEMATICS & STATISTICS

MINUTES OF THE 83rd MEETING, MAY 26-28 2005

THURSDAY, MAY 26, 2005

1. **WELCOME BY A REPRESENTATIVE OF NORTHWEST COMMUNITY COLLEGE**– Dr. Beth Davies, VP Educational and Student Services, welcomed the BCcupms to Prince Rupert and the new campus of Northwest Community College.

2. **ADOPTION OF THE AGENDA FOR THE 83RD MEETING OF THE BCcupms**

Motion: (moved by Costa Karavas and seconded by Leo Neufeld)

That the Agenda for the 83rd meeting be adopted as distributed.

Carried.

3. **ADOPTION OF THE MINUTES OF THE 82ND MEETING, HELD AT THE UNIVERSITY COLLEGE OF THE FRASER VALLEY**

Motion: (moved by Mona Izumi and seconded by Wesley Snider)

That the Minutes of the 82nd Meeting be adopted as posted on the website.

Carried.

4. **CORRESPONDENCE**

As a result of motions passed last year, Susan Milner sent letters to all school districts to encourage them to include numeracy and early numeracy as goals in their education plans, and to recommend that they identify two mathematics resource people in each elementary school and one district mathematics specialist. There was no response from the school districts; however there was a letter from BCCAT praising our efforts, and one from Marc Garneau of the BCAMT pointing out that BC just completed a 3-year “Early Numeracy Project” (ENP) and continues to support it.

5. **ANNOUNCEMENTS**

5.1 Notice of Elections: At this meeting, elections for **Chair of the Statistics Subcommittee**, for **Vice Chair of the BCcupms** and for **Secretary of the BCcupms** will be held. These are all two year terms. Judy Malcolm and Leo Neufeld agreed to coordinate nominations for Vice Chair and Secretary. As there were not enough statisticians present at this meeting it was agreed to postpone election of the Chair of the Statistics Subcommittee until next year.

5.2 Conferences:

The following conferences were announced: the Statistical Society of Canada Meeting (in June) in Saskatoon, the CMS meeting (in early June) in Calgary, the BCAMT meeting (October 21) in Port Moody at Heritage Woods Secondary, and the AMATYC meeting (in November) in San Diego.

5.3. Attendance Lists: Susan Milner circulated the attendance lists.

5.4. Announcements from the host, Mona Izumi:

After the usual announcements, Mona informed the group that a cruise ship was in, so there would be fireworks in the evening down at the waterfront.

6. **ADDRESS: Recent curriculum changes to elementary and secondary mathematics: potential effects on the transition to post-secondary education** – Marc Garneau, President of the BC Association of Mathematics Teachers.

Marc gave us an overview and some reflections on the January 2005 consultation draft of the revised K-9 Common Curriculum Framework. The Western and Northern Canadian Protocol (WNCP) has been in place for the elementary curriculum since 1995. Concerns about content, as well as the desire to make use of new research in mathematics education, has motivated the desire for a revision. Other concerns that will be addressed by this revision include: post-secondary acceptance of different pathways, flow between grades, the large number of topics, and clarity of outcomes. There will be an increased focus on early numeracy. The K-9 Revision Report was completed in April. Revision of the curriculum based on this report should be completed and signed off by June 2006. The report is available on the web at http://homepage.mac.com/hold_fast/MED_Math_Projects/FileSharing29.html. Less emphasis on algorithms and more on using personal strategies to develop understanding will mean that greater support for elementary teachers will be required. The changes were to be minor, but have become significant enough that new textbooks will be required. This could delay actual implementation. At earliest, the revisions would be implemented in 2007 for Kindergarten and grades 1, 4 and 7; in 2008 for grades 2, 5, 8 and 10; in 2009 for grades 3, 6, 9 and 11; and in 2010 for grade 12. One difficulty with this timeline is that the new grade 10 curriculum would be implemented before the new grade 9. BC Grade 10 is provincially examinable, so this could cause a transition problem.

Looking ahead to the grade 10 – 12 curriculum revision report, Marc reported on the results of the WNCP survey of post-secondary institutions. Institutions were asked to rate the importance of outcomes in three different pathways: science, non-science, and trades/technical. An analysis has been done to see how well the current courses fit with what is needed in each pathway. From this analysis it seems likely that topics such as conics will not be in the new curriculum. Vectors will be added to the Principles of Math 12 course and Probability and Statistics will be removed. The non-science pathway will have more emphasis on functions, but logarithmic and exponential functions will be dropped. The trades pathway will include some algebra. Pathways will not facilitate transitions: students will be expected to commit to a particular pathway by grade 10—remediation will be left to tertiary school systems. Marc also reported that the WNCP is considering developing a common calculus course.

MATHEMATICS AND STATISTICS SUBCOMMITTEE – Parallel Sessions

Mathematics Session

Math1. Effects of the changes to PM11 & 12 on students in first-year mathematics courses—has your department made any adjustments?

A number of institutions reported that adjustments were being made to accommodate weaker levels in students arriving from highschool:

- Justin Gray reported that SFU was adding a new course (Math 150) which will be a 4-credit course with extra time spent on pre-requisite material. Students in this course will write the same final exam as Math 151. Currently students self-select this option.
- Susan Oesterle reported that Douglas offers Calculus I in a 4-hour lecture + 2-hour lab format. The lab time is often spent on precalculus review.
- Susan Milner related her experience with offering a precalculus quiz to Calc I students part-way through the semester. Students who did poorly were advised to take a 1-credit top-up course. Unfortunately most students did not take the advice. UCFV is considering doing something like what SFU is proposing, with PM 12 students with a B having to take the longer course. Their research shows that 84% of students with As in PM12 did well enough in Calc I to go on, while this was true of only 32% of the B students.
- Wendy Lynn commented that Capilano used to have a 6-hour Calc I but had to split it into two courses (4 hours/2 hours) due to FTE-calculation issues. However, they will be dropping the two-hour component, as the course that this transferred to is no longer being offered by the universities. Susan Oesterle clarified that at Douglas College, the 2-hour tutorial component is taught by TAs and so their format has not raised FTE concerns.
- Clint Lee reported that Okanagan College is currently looking at increasing hours in their calculus courses. He asked about workload calculation. Susan Milner reported that when UCFV offers the longer (6-hour) version of Calculus, the course will probably count as 1.5 courses for the instructors.
- Wayne Matthews explained that Camosun has done something similar at the precalculus level, offering two courses, one 5-hour and one 7.5-hour (6-credit), that both end up in the same place. The instructor

teaching the longer course just counts the hours. To be eligible for the shorter version, students need an A in Math 11 or a C/C+ in Math 12.

- Michael Nyenhuis reported that Kwantlen will be splitting the pre-calculus into two versions (one 4-hour, and one 6-hour) starting in September. Both courses will have the same lectures, but the longer version will have a two-hour lab.
- Nora Franzova related Langara's experience using ALEKS with their highest level precalculus courses. This highly interactive computer software allows students to evaluate and remediate weaknesses. Students were offered the perk of being able to repeat the course without penalty if they used ALEKS diligently. Despite this incentive students did not persist with ALEKS, although many tried it initially. Langara will continue to use this software with their Math for Elementary Teachers, but will no longer use it with their precalculus students.

At this point discussion moved to more general considerations of the deficiencies noticed in students coming from the new PM11 and PM12 courses. Areas of concern included: weaker knowledge of trigonometry, weaker understanding of functions, and over-reliance on graphing calculators. Marc Garneau commented that there is more trigonometry in the new curriculum than there was before, however it is all concentrated in grade 12 and as a result there may not be enough time to develop understanding. He also noted that there will be a non-calculator portion of the PM12 final exam and that this should send the right message to students. There was some discussion about the use of formula sheets on exams. Marc confirmed that students are given a list of basic trig identities for the final exam, but agreed that we should communicate with teachers to let them know that the use of formula sheets is not common at the university/college level.

Concerns were also raised about students storing information in their graphing calculators. Wesley Snider explained the procedure Douglas College uses to check that memories of the graphing calculators are cleared before each exam. This is manageable in classes of 35 to 40 students. Several institutions with larger class sizes (SFU, UVIC, and UBC) do not allow graphing calculators in exams at all. Others (like Camosun, North Island Community College, and Langara) are giving non-calculator portions on exams. Still others write their exams differently to encourage good use of the graphing calculators.

Marc Garneau asked the group if there were any topics that had been missed in the Survey of Post-Secondary Institutions. Several people mentioned the notion of functions, but Marc noted that although students may be weak in these areas, the topics are there. Rational functions do seem to be missing; 'e' should be in PM12 but is done very superficially; inverses are done well in PM11 but are not reinforced in PM12. Susan Milner noted that 33% of the current PM 12 curriculum is Probability & Statistics and that this will not change before the curriculum revision takes effect in 2010 at best. By show of hands, a large number of institutions indicated that they had increased the number of transition courses they are offering. It seems likely that the need for these will be ongoing.

Wayne Nagata reported that UBC offers two different science-stream calculus courses, one for those who have taken Calculus 12 and one for those who haven't. Both groups write the same final exam. Success rates in the course without Calc 12 are quite poor (50%). This led to discussion of the usefulness of Calc 12. Justin Gray agreed that based on research done at SFU there is a strong correlation between those who have taken Calc 12 and those who succeed in first-year calculus, but he noted that it is just a correlation. Students who take Calc 12 are usually strong Math students. In addition, it is not a provincially examinable course, so this could affect how it is taught. David Leeming related UVic's experience with having all students with less than a B in Math 12 write an assessment test for entry into Calc I. 90% failed and had to take precalculus. Students no longer bother to write the assessment if they have less than a B in Math 12. Failure rates have dropped by 40%. Judy Malcolm confirmed that they had a similar experience at CNC. Nora Franzova reported that Langara also makes use of a diagnostic test, however their experience is that more and more students are taking it. Results of the test stream students into different calculus courses—the slower version takes two semesters. This version is not popular due to transfer issues.

Leo Neufeld asked about how students who take Calc 12 and then take the Challenge Exam fare in Calc II. Michael Nyenhuis replied that of the 3 students he knew of (who had 98% on the Exam), all did very well. Justin Gray reported that fewer students were taking the Challenge Exam. Marc Garneau stated that he often recommends that students take the Exam for the experience, however he acknowledged that most students who

take Calc 12 are not looking for advanced placement, but merely for an edge when they take Calc I at university. John Josafatow reported that at Selkirk students have the option to challenge Calc I to get credit for the course. Students who did very well in the challenge exam did well in the next course, but the success of those who scored in the B-range was less predictable.

There was a brief discussion of the issue of stale-dating of grades. Institutions that use BANNER can no longer check the date of grades. PeopleSoft also does not allow this. One way to introduce a type of stale-dating is to no longer list "Algebra" courses as equivalent to the current "Principles" courses. Another option is to include strong advice in the calendar to deter students from taking courses with stale prerequisites. It was confirmed that most institutions use a blended highschool/provincial final exam grade for course prerequisites.

Math2. Academic dishonesty: who is cheating, how they're doing it, and how institutions are responding.

A number of methods of cheating were discussed, along with possible ways to deal with them.

"Traditional Methods":

- Tutors doing assignments for students
 - Antidotes: do not weight marks for assignments heavily and/or do not make assignments worth marks at all
- Students looking at neighbours work during an exam
 - This is especially a concern with large numbers of students and small classrooms.
 - Antidotes: book suitable rooms for exams; keep rows straight; ask people sitting at the back to move to the front; provide multiple versions or at least make it look as if there are multiple versions.
- Students hiding notes in the washroom
 - Antidotes: students who expect to need to leave the room can be given their exam in parts; escort students to the washroom.
- Students having notes in pencil cases or in dictionaries
 - Antidotes: do not allow pencil cases; ban or at least check through paper dictionaries.
- Students stealing exams before they are given
 - Antidotes: be vigilant about exam security; know how the print shop handles botched print jobs.
- A student bringing a friend to a (large) exam so that they could copy from them
 - Antidote: be aware of who is in your class; try to bring only the correct number of exams to the exam room.
- A student leaving with the exam, marking part, then claiming it wasn't fully marked
 - Antidote: be careful with exam distribution and collection procedures to ensure that all exams are accounted for.

"High-Tech Methods":

- Students taking pictures of exams with digital cameras
 - Antidote: Ban digital cameras.
- Students text-messaging during an exam.
 - Antidote: Ban cell phones. Note that camera phones are also a problem.
- "Cramster" website
 - This website lists Science and Engineering texts for which all solutions are available.
 - Antidote: Do not give assignments that are worth marks.

Giving assignments seems to be becoming more and more problematic. Several suggestions were made on how to get the benefit of the assignments and avoid or minimise the potential for cheating. Some institutions give frequent quizzes with questions taken directly from assigned homework. Susan Milner has students work in pairs and encourages them to give credit in their solutions to sources of help they received. She commented that we should make an effort to be good role-models and give credit when solutions or problems we present come from other sources. As well, if the writing of the solutions is stressed, plagiarism becomes more difficult.

Justin Gray reported that SFU had formed a task force on academic honesty and integrity in response to a nation-wide survey on cheating. Students felt that cheating was common and they had to cheat to be on a level playing field. Students have the impression that instructors turn a blind-eye. Susan Milner added that according to a U.S. survey, 15% of students would never cheat, 15% will cheat no matter what, and 70% will cheat if it's convenient and they are desperate enough. This led to the observation that vigilance and strict rule enforcement from the beginning is important in order to create an environment where cheating is not perceived to be acceptable in any way.

There was a brief discussion of abuse of Withdrawals Under Extenuating Circumstances. At SFU students must withdraw from all courses in order to be eligible for this designation. At many institutions this is handled by the Registrar's Office or the Dean and not by faculty.

Math3. On-line mathematics courses. What is being offered or planned by your department?

The following institutions indicated that they offered some type of on-line course:

- Okanagan College (Clint Lee) offers a Precalculus course. It is not registered with BCCampus. Very few students take this option since "in-person" sections have also been offered. It is very similar to the textbook—examples in the book are discussed in different ways and the on-line material focuses students on the relevant text material. It uses WebCT. It was very work-intensive to develop. They would like to include more interactive components but have not had time. The course currently does not have links to other sources.
- Northwest Community College (Mona Izumi) offers Math for Teachers through BCCampus. She has always had full enrolments. This course does have links to the text publisher's site. She is in the process of developing an on-line precalculus course in order to be able to reach remote students. In her course, students talk to each other electronically, as well as to the instructor. Success/completion rates are not a concern, likely because her students tend to be mature students, with full-time jobs, who enjoy the flexibility and are highly motivated.
- Yukon College (Tim Topper) has done quite a bit with electronic courses but has found that completion rates are very low. Students are too isolated from other students and too often find themselves in environments in which study is a "strange" activity. They have a lot of video-conference equipment which the college uses to teach Math courses—they can have up to four communities on-screen at the same time. This offers the advantage of providing a schedule and a learning community for the students.
- At Langara College (Nora Franzova) Alan Cooper experimented with an on-line precalculus course that was not registered with BCCampus. It was semi-successful the first time it was offered, but subsequently there were not enough registrants. His course included links to interactive features, but the difficulty is that over time links disappear. There does not seem to be a lot of support in the department for the need for on-line courses. Success rates are not good due to attrition. Students seem to miss the social part.
- UCFV (Susan Milner) offers Intro Stats through BCCampus and runs scheduled tutorials on campus. Students seem to like this.
- Ada Sarsiat (ABE NWCC) reported that BCCampus will be piloting a Provincial Level Math Course (roughly Math 12) in September. There has been a call for individuals who would be interested in developing an on-line ABE Provincial Calculus course. There are some very good on-line courses.
- SFU (Justin Gray) has not done any major innovations in on-line courses. Math 190 has moved away from WebCT and they will be trying out First Class (an e-conferencing system). This system will make it easier to organise discussion groups and will allow instructors to set announcements so that they open right away.
- NIC (Slava Simice) makes use of an on-line observatory for Space Science & Astronomy courses.
- Tiina Hohn of Grant MacEwan College in Edmonton indicated that WebCT is commonly used. She is interested in finding good interactive on-line materials but has not found anything perfect. There is no central organisation in Alberta that looks after distance education.
- No institutions offer courses that are only partially on-line.

A number of concerns arose as part of the discussion:

- On-line courses in math seem to be merely electronic textbooks and do not offer enough in terms of student interaction.
- There was confusion about the roles of BCCampus, BC Open University and Thompson Rivers University with regard to on-line and distance-ed courses. Thompson Rivers University (Open) has taken over from

BC Open University, which no longer exists. There seems to be no connection between TRU Open and BCCampus.

- There was concern about how on-line UT courses are articulated. There is a sense that transfer is automatic when courses are converted to an on-line format, since this does not change the content. Mike Nyenhuis indicated that Kwantlen had experienced some difficulties articulating courses with TRU Open.

This latter point led to a brief discussion of articulation with private institutions. Leo Neufeld commented that Columbia College and Coquitlam College regularly participate in the BCcupms, so there has been no problem to date. However with the recent increase in private institutions some consideration should be given to how we will interface with them. So far, although DQAB (the Degree Quality Assurance Board) has given permission to some private institutions to grant degrees, there has been no approval for a Science Degree programme. We should stay alert, however, since this could change. Another consideration is the cost of articulation—should private institutions have to pay? We should monitor this situation yearly, and check the DQAB website (include link) periodically.

Statistics Subcommittee Session

(Detailed minutes of this session and the Saturday morning PD sessions can be found on the BCcupms website: <http://ccins.camosun.bc.ca/~bccupm/>.)

Stats1. Articulation and Transfer Issues for Courses in Statistics

As a point of information, the Acting Chair noted three streams in introductory statistics courses: (i) two calculus-based courses (6–8 credit hours) in probability and statistics at the 200 or 300 level; (ii) a single calculus-based course (3–4 credit hours) in probability and statistics at the 200 or 300 level, and; (iii) a single non-calculus course (3–4 credit hours) in statistics at the 100, 200, or 300 level. Non-calculus introductory statistics courses are sometimes also taught by economics, business management, and psychology departments at postsecondary institutions.

Stats2. Articulation between Lower and Upper Division Courses

Because introductory statistics courses that are taught without calculus content can be assigned 100, 200, or 300 level course numbers and those introductory calculus-based statistics courses can be assigned 200 or 300 level course numbers, students with lower level credit can request and receive transfer credit from a lower division course to an upper division course. Discussion revealed no opposition to this practice.

Stats3. Statistics Service Courses Taught by Non-Statisticians

The Acting Chair reported the results of a survey in 2003 of 199 liberal arts colleges in the United States authored by Tom Moore (Grinnell College, Iowa) and Julie Legler (St. Olaf's College, Minnesota). This survey, with a response rate of 67%, showed that only 40% of colleges responding have at least one PhD statistician on faculty with 50% of introductory statistics courses taught outside mathematical science departments. Only 25% of these colleges offered a second course in statistics.

Statistical software was reported used in 75% of non-calculus introductory courses, 74% of calculus-based introductory statistics courses, and 55% of probability and statistics two-course sequences. Student projects were reported in 69% of non-calculus introductory courses, 67% of calculus-based introductory statistics courses, and 48% of probability and statistics two-course sequences.

The subcommittee discussed whether these results would also be representative of BC colleges, universities, and university-colleges without reaching any conclusions or making a recommendation for a similar survey in BC. It was noted that limited course offerings in statistics form a hiring barrier for mathematical sciences departments in the colleges and it was generally agreed that quality of instruction is a stronger consideration than whether an instructor's doctorate is in statistics.

Stats4. Content in Statistics Service Courses for Engineering Students

Motion: That the Chair write a letter to the Canadian Engineering Accreditation Board to enquire about content required in statistics courses for engineering students. (Moved by Colin Lawrence and seconded by Costa Karavas)

Carried unanimously.

Stats5. Information Items

Colin Lawrence reported that a new offering for the British Columbia Institute of Technology will be the Degree Transfer Program in Science and Technology to begin in September 2005. This new program will include as an option an introductory probability and statistics course worth 5 credit hours.

Stats6. Recommendations for the Statistical Subcommittee at Future Articulation Meetings

Recommendations that were considered to encourage greater attendance by statisticians at future Articulation Meetings included adding scientific sessions and joint, or contiguous, meetings with the Pacific Northwest Statistics Group.

7. BRIEF REPORTS FROM THE MATHEMATICS AND STATISTICS SUBCOMMITTEE SESSIONS.

Statistics Subcommittee

Kevin Keen reported on the Statistics Subcommittee session. He thanked Alex Liu for taking the minutes.

Mathematics Subcommittee

Susan Milner summarised the discussions of the Mathematics Subcommittee session.

8. INSTITUTIONAL REPORTS, PART I.

All reports are arranged alphabetically and included in the Minutes of Friday, May 27.

The Thursday Session of the BCcupms adjourned at 3:50 p.m.

BCcupms and Secondary School Teachers Session

THURSDAY, MAY 26, 2005 (4:00 p.m.)

1. Introductions and Opening Remarks.

We welcomed the visiting teacher, Derrick Force, from Prince Rupert Secondary.

2. Reports

2.1. Ministry of Education—Marc Garneau for Pierre Gilbert

Pierre Gilbert, the Ministry of Education representative, was unable to attend. In his place, Marc Garneau gave a progress report on the WNCP Common Curriculum Framework for K – 12 Math. The Post-Secondary Report for BC is available on the web at [Insert link](#). Marc distributed the executive summary of the report including the recommendations. He discussed the important role that grade 9 will play: it is a common course that must address a wide range of student abilities and yet be rigorous enough to prepare students for the Pure Math pathway. Properties of Number Systems and Algebra are common to all three pathways. The demand for different pathways arises from the different needs of the workplace, business, and post-secondary institutions. Marc briefly went over the content of

the various pathways: the Applied pathway includes algebra, logic, stats, properties of number systems, and functions; the Consumer/Essential pathway includes measurement, geometry, properties of number systems, algebra, and math of finance; the Pure pathway includes algebra, functions and their characteristics (general functions, polynomials, trigonometric functions, logarithmic and exponential functions), transformations, geometry, properties of number systems, systems of equations, vectors, logic, and measurement. There seems to be too much in the Pure pathway. No cross-over between pathways will be allowed. A common calculus course will be developed. There will be 90 hours of instruction. Presently jurisdictions report that grades 10 - 12 have approximately 25% less instructional time than is needed. The current curriculum is designed for 125 hours, but no one seems to get this, especially at the higher level.

Discussion of a variety of issue and concerns followed:

- Marc reported that teachers have been concerned about exam security, as questions can be reused. The Ministry is trying to build up a bank of tried questions to be able to offer testing on demand in the future. They will only make one exam per year available. Teachers will be able to look at the secure exam, but cannot work with their students on it.
- Clint Lee pointed out that the new applied course may no longer be suitable for technology programmes. They will only make one exam per year available. Teachers can take a look at the secure exam, but cannot work with their students on it.
- Graphing calculators can be used for the Grade 10 exam, but are not required.
- Some felt that given the amount of content in the Pure pathway it would make sense to increase the amount of time allotted to mathematics. Others felt that the high school courses could focus on general skills, and not spend so much time on the specifics. It was commented that many Math 12 students already take extra math when they opt to take Calculus 12.
- There was also concern about students having to choose their pathway by the end of grade 9 with no opportunity to change their minds. This could have a detrimental effect on the middle pathway since parents will opt for the pathway that gives their children the greatest range of opportunity

Marc commended the work done on the curriculum revision so far.

2.2. BCAMT—Marc Garneau

The BCAMT continued to be very active this past year continuing with many ongoing projects and generating new ones. Our greatest energies were expended on:

- continuing the developing of our K-12 Vision of School Mathematics in BC
 - completed second survey
 - 50 participants came to an all-day forum which brought together many stakeholders in mathematics education to discuss many of the important issues. We are grateful for the many post-secondary representatives who attended in response to an invitation sent through the BCcupms listserve.
 - The final document is set to be released at our Fall Conference on October 21, 2005
- Responding to the draft of the common curriculum framework of the WNCP
 - held an all-day feedback session in November on an early draft
 - helped to organize 7 regional feedback sessions around the province to the first released draft
 - submitted a lengthy response to the WNCP committee

Highlights of other activities:

- Fall Mathematics Conference on October 22, 2004 in Langley
- 120 participants attended our 2005 New Teachers Conference in Burnaby
- Plans are well underway for our 2005 Fall Conference at Heritage Woods Secondary in Port Moody (<http://www.bctf.ca/bcamt/fall2005>)
 - There will be a special subconference involving Teachers Teaching with Technology (<http://www.bctf.ca/bcamt/t3>)
- Published a sequel to the successful *Primary Problems to Ponder* called *Intermediate Investigations to Inspire*. Both are selling very well and many districts are taking advantage of the professional development package that accompany them.
- Working with other provincial and territorial associations to develop a Canadian Association for the Teaching of Mathematics

- Publications (Vector, newsletter), Website & Listserv continue to be important sources of information and professional development for mathematics teachers in BC
- Our membership numbers are down a bit but we continue to be the largest provincial specialist association in BC and the largest association of mathematics teachers in Canada

2.3. BC Colleges High School Mathematics Contest Report – Clint Lee (see attached report, page 26)

2.4. BC Universities Calculus Challenge Exam— Wayne Nagata

General information on this exam is available at the web page: <http://www.math.ubc.ca/Ugrad/Challenge/>

Any calculator that is permitted for the Principles of Mathematics 12 provincial exam is also allowed for the calculus challenge exam, and there is a minimal formula sheet provided with the exam. The 2005 exam is hosted by UBC, and will be written on June 9. The 2004 exam was hosted by SFU, and a discussion of the results is available at <http://www.sfu.ca/~alistair/challenge/exam-2004-final-report.html>. 189 students wrote the exam, the median score was 64, and 77% of the students who wrote obtained a passing score (at least 50).

3. General Discussion: Graphing Calculators and the use of Maple/Mathematica

Derrick Force asked about the use of graphing calculators and the use of software at the universities. His Grade 12 students are required to use the graphing calculator for a portion of their final exam, yet he has heard reports that they are not allowed to use them at university. As well, students report having to learn Maple and/or Mathematica in short order.

Generally calculators are not allowed at institutions that have large class sizes. Their use is not discouraged, except during exams.

Although Computer Algebra Systems such as Maple and Mathematica are used at a number of institutions, students are taught how to use them and are not expected to have that knowledge coming in from highschool. The use of these software tools varies considerably. Some institutions (like NIC) have a 2-hour Maple lab every week. Others (like Kwantlen and Douglas) offer some Maple Labs in first year to introduce students to the basics, and then require some assignments done in Maple at the second-year level. Maple is also used at a number of institutions as a demonstration tool to aid instruction.

4. Some Math Problems and their Surprising Solutions—David Leeming

Susan Milner introduced David Leeming. She announced that he had been awarded a Teaching Excellence Award from UVIC last year, and will also be awarded one from PIMS this year. David entertained us with several interesting problems.

5. Adjourn to Reception.

The session adjourned at 5:43 p.m.

FRIDAY, MAY 27, 2005

1. OPENING REMARKS.

1.0. Additions to agenda:

- 4.0. a) Allotment of more time for Grade 12 Math—Wesley Snider
- 4.0. b) Transitions between pathways—John Josafatow
- 4.0. c) Non-calculator section on the Math 10 Final—Wayne Matthews

1.1. Introduction of representatives

1.2. Announcements from the host:

Erin O'Hallaran will be giving a short demo of MyMathLab software at 12:30 p.m. today.

Susan Milner announced that she has copies of the Articulation Handbook for new representatives who would like to have one. She reminded the group that exam request sign-up sheets should be placed on the long table in the break-room. Lunch will be served on campus. Dinner reservations have been made at Zorba's Taverna for 7:00 p.m.

1.3. Attendance Lists

The attendance list was circulated.

2. REPORTS

2.1. B.C. Council on Admissions & Transfer – David Leeming

2.2. ABE—Costa Karavas

The Adult Basic Education Mathematics Articulation Working Group met at Vancouver Community College-City Centre Campus on March 3-4, 2005.

Articulation Guide

The guide contains transfer information (course numbers for equivalent courses at different institutions) and the learning outcomes for all our courses. There is also a list of members of the ABE math working group and their institutional contact information. See <http://www.aved.gov.bc.ca/abe/handbook.pdf>

Articulation of new and existing courses

New courses and revisions to existing ones were submitted from Selkirk, NWCC, Kwantlen, NVIT, VCC, and the Institute of Indigenous Government.

BCCAT Transfer-Friendly Course Template

Most colleges have their own form they use to articulate courses through their Education Councils before they are submitted to BCCAT. The consensus was not to make the BCCAT Course Template mandatory for articulating ABE math courses.

Enrolment

Enrolment in ABE Math has experienced a drop or has stayed the same in some institutions since last year. Most institutions charge tuition for ABE programs, some charge tuition only to students that have already graduated from high school, and some are tuition free.

Online ABE Math courses

Intermediate level (Math 10) and Advanced level (Math 11) courses are currently been offered as BCcampus online courses. Provincial level (Math 12) will be completed by September 2005. A proposal for development of online

Calculus 12 has been submitted. Funding for these projects come from the Bccampus *Online Program Development Fund* (OPDF).

Bccampus Presentation – Licensing Agreements

Mr. Paul Stacey explained that there are only two licensing options when a course is created. One is called *Creative Commons*, which is a way of licensing to share the course with all. The other is *BC Commons*, which is a way of licensing to share the course with BC instructors. The website is www.creativecommons.org. The *BC Commons* site will be created soon; it is hoped to be ready by September 2005. Each course will have a logo on it for one of the above licensing options. When the logo is clicked on, it will show a copy of the deed, and the license agreement.

2.3. PIMS—David Leeming

David reported on PIMS' education outreach initiatives. They have funded special speakers for the Highschool Math Competitions, and the colleges can tap into this resource. They are also interested in getting involved in First Nations Math education. They would like to encourage completion of highschool among First Nations students and get them connected with mathematics. David asked for others who are interested in this to let him know. The University of Washington has joined PIMS as a partner and negotiations with the University of Regina are ongoing. Tiina Hohn reported that Alberta is encouraging their colleges to join.

2.4 Changing the Culture Conference – Wayne Matthews

Wayne reported on the 8th annual Changing the Culture Conference which was held at SFU's downtown campus on April 22. This conference is usually held on the 2nd last Friday in April and is organised by Malgorzata Dubiel. This year's conference was well-attended by all levels of mathematics education. It began with a panel discussion on Understanding Math Concepts. The discussion of irrational numbers was particularly interesting. In general, the presentations were very good. Phillip Loewen of UBC gave a very entertaining talk. Participants also had the opportunity to attend two workshops: one entitled Calculus 12--The Ultimate Precalculus course and one on non-traditional intro-level math courses. There was also a panel discussion on Assessment. The conference closed with a public lecture by Keith Devlin, which looked at the mathematics that animals intuitively possess.

2.5 AMATYC—Slava Simice

Slava reminded the group that the Northwest Region of AMATYC includes British Columbia. A regional conference takes place yearly. Last year it was in Orlando, Florida. There are many workshops to choose from. Fees are high, but presenters do not need to pay. In September they have a website where you can find people to share rooms with to cut costs. Next year's conference will be in San Diego. Every province/state should have two delegates. Ken Towson should be the other, but anyone else who is interested should let Slava know. Guidelines for dual enrolment in mathematics were voted on at the last meeting.

3. BUSINESS ARISING FROM THE MINUTES OF THE 82ND MEETING

3.1 Associate Degree in mathematics: a core curriculum – Neil Coburn(written)

Over the last year a small group worked on the feasibility of a flexible pre-major or Associate Degree in Math. Neil Coburn is now Dean and will no longer be able to pursue this. A letter of intent was sent to BCCAT, and in response BCCAT indicated its support for more detailed development of what will likely be a flexible pre-major. The BCcupms needs to find someone to write a letter of intent to BCCAT and request financial support for a formal study. The study itself can be contracted out. David Leeming has a model proposal submitted by Sociology and Anthropology that could give the writer an idea of how this can be set up. An Associate Degree has not been ruled out, but a flexible pre-major may have fewer requirements and be easier to achieve. The idea is that it would help students fulfill all first- and second-year requirements for a major in Math or Stats, so they would be able to transfer directly into third year (or possibly only need to take a couple of second-year requirements in third year), and might have priority access to some courses. There was concern that many institutions would have a difficult time offering all of the courses. This concern would need to be part of the study. Real Analysis was flagged as a potential problem. It was suggested that rotating such a course amongst lower mainland institutions might help address this. Alex Liu and Leo Neufeld volunteered to write the proposal.

Action (Alex Liu and Leo Neufeld): Write the proposal to BCCAT requesting funding for more detailed research into the feasibility of a flexible pre-major in Mathematics.

3.2 BC Colleges Math Contest: speakers list and funding – Susan Milner

This year PIMS funded several guest speakers for the BC Colleges Math contest. Anyone interested in adding their names to the speakers' list should contact Clint Lee, Susan Milner, or Rick Brewster. The list will be posted on the BCcupms website.

Action (Susan Milner): Remind the members of the listserv to ask for volunteers willing to give talks at the 2006 May contest.

Action (Clint Lee or Rick Brewster): Inform the members of the listserv of the deadline for funding requests from institutions interested in inviting a speaker.

4. NEW BUSINESS:

4.0.(a) Allotment of more time for Grade 12 Math—Wesley Snider

Wesley raised the issue of the conflict between the large number of concepts in the Pure Math pathway and the number of hours allotted. He pointed out that both English and Math knowledge are critical for post-secondary success and therefore additional time for Math (and English) over other subjects is justified. Marc Garneau had indicated that now would be the time to comment on this before the curriculum revision has been completed, however he warned that if we simply ask for more hours in math, the Ministry will likely just say no. Discussion of how this should best be dealt with followed.

There was discussion about whether more time is required, or whether it would be more appropriate to reduce the number of topics. A Position Statement on School Mathematics Curriculum in Canada (drafted by the CMESG for discussion with the Canadian Mathematics Education Forum in Toronto in 2005) was distributed. The Position Statement adopts a "Less is More" philosophy. It was noted that both the recent survey of post-secondary institutions and a similar survey run by Leo Neufeld several years ago came up with consistent results in terms of skills/concepts that post-secondary institutions expect students to have. It would not make sense for our group to re-formulate this list. However, the Ministry's attention needs to be brought to this issue of too much content and too little time. If the required content is not covered then there will be an increased need for transition courses. This is already the case. More and more institutions are giving assessment tests to students who have grade 12 to determine whether or not they are ready for calculus. Concern was expressed that there was no representative from the Ministry present to respond to our concerns.

One option considered was to put forward a motion in support of the BCAMT and their concerns (including the lack of bridging courses, the softening of grade 9, and the need for a non-calculator portion on the Math 10 final exams). However, it was decided that it would be more beneficial to separate these issues, and that regarding curriculum, we should be able to provide more substantive feedback than merely supporting the BCAMT.

Action (Jack Bradshaw, Wayne Matthews, Gary MacGillivray, Clint Lee and Susan Oesterle): Look at the report which is set to come out in June and formulate a response to it on behalf of the BCcupms.

Action (Susan Milner): Write a letter to Pierre Gilbert, letting him know that a formal response will be submitted, and requesting that a copy of the report be sent to each member of the sub-group.

4.0. (b) Transitions between pathways—John Josafatow

John re-raised the issue of the lack of ability for students to move between pathways mentioned in Marc Garneau's address on Thursday. A motion will be formulated and this topic revisited after lunch.

4.0. (c) Non-calculator section on the Math 10 Final—Wayne Matthews

Wayne explained that the Math 12 final exam had a non-calculator portion, but that for the Math 10 exam students are able to use the graphing calculator throughout. The request to have a non-calculator portion for the Math 10 final exam was declined due to cost considerations.

Motion: (moved by Wayne Matthews and seconded by Wesley Snider)

That the BCcupms supports the BCAMT's request to include a non-calculator section on all Math 10 provincial exams.

Carried. (1 opposed)

4.1. Articulation of third-year courses: which ones are appropriate?

Susan Milner reported that this topic had been discussed at the meeting of articulation chairs. More institutions are offering higher-level courses. Given that residency requirements are lower than what they used to be the BCcupms needs to consider which third year courses might be appropriate for articulation.

Kevin Keen related the discussions of the Statistics subcommittee on this issue: there are three different streams of statistics courses, carrying numbers from the 100 to the 300 level. Some carry a higher number because institutions are trying to encourage students to wait until third year. The course number is not an issue for awarding transfer credit for statistics courses.

Both Justin Gray (SFU) and Gary MacGillivray (UVIC) confirmed that if courses are equivalent it doesn't matter what course number they carry. The question of whether complex analysis from UCFV would transfer to TRU or others was raised. It seemed likely that credit would be awarded, but students are still limited to a maximum of 60 transfer credits. Currently only a small number of students are trying to transfer higher level courses, and these are being assessed on an individual basis. At UVIC only 3 units of upper level math can be transferred in to apply to a Math Major, however students would not have to repeat courses already taken.

4.2. Math/stat flexible pre-major—David Leeming

This was discussed under item 3.1. above.

4.3. Institutional conversion scales between percentages and letter grades—Wayne Matthews

Wayne reported on his survey of the conversion scales that different institutions use to convert percentages to letter grades. This survey was conducted because of concern that students at Camosun were disadvantaged by Camosun's grading scheme. Most institutions have an official grading scale. Camosun's 95% A+ with 5% drops for each subsequent grade was among the highest. Following Wayne's report the administration agreed to adjust the scale to lower the percentage requirements for letter grades, particularly at the high end. It is believed that this will remove barriers (real or perceived) that students transferring to UVIC may have faced.

This led to general discussion of consistency of grading between and within institutions. Universities often end up scaling marks. SFU is currently discussing this issue: Justin Gray noted that institutions are listing objectives along with the syllabus and that it may be useful to have criteria for what students at each letter grade should be able to do. Wayne Nagata commented that UBC has just put out an informal document for new teachers on what different grades represent. Other suggestions to improve consistency included having common exams, or at least sample exams for new instructors to look at.

4.4. Transfer and articulation requests from other countries

Transfer and articulation requests from other countries are becoming more and more common. Currently they are assessed one at a time, after students have already applied for admission. Susan Milner reported that at UCFV they are under pressure to give anyone with 12 years of Mathematics (anywhere in the world) access to Calculus, which is problematic.

Justin Gray commented that students with Asian or Persian educations have generally done more advanced mathematics. SFU requests all documentation that a student can provide. They use assessment testing as a fallback.

At Kwantlen (Mike Nyenhuis) there are not a large number of requests for recognition of high school work, but such students would be required to write the Math Placement Test. Many foreign students write it and do well. He has been asked to articulate some college-level courses.

At Douglas College (Susan Oesterle) high school level transfer is handled by the Registrar's Office. They award a grade level strictly based on the number of years of math education the student has. 12 years is considered to be equivalent to Math 12 regardless of where it is taken. This is not consistent with what they have experienced. School systems in some countries cover much more in 12 years than others.

Leo Neufeld asked if PLA still exists and whether a fee is charged for this service. He suggested that perhaps this should be handled by the PLA expert at each institution.

(The session broke for lunch. During the break Erin O'Hallaran of Pearson Publishing demonstrated MyMathLab.)

The Search Committee Report:

The Search Committee nominated Jim Bailey for Vice Chair and Susan Oesterle for Secretary. There being no further nominations from the floor, Jim and Susan were each acclaimed in their respective positions for a two-year term.

4.0. (b) revisited:

Motion: (moved by John Josafatow and seconded by Gary MacGillivray)

That the BCcupms encourages the Ministry to provide a mechanism to enable transitions between the pathways in the grade 10 – 12 math courses.

Jack Bradshaw expressed concerned with the motion, noting that Intro Math 11 was intended to allow students to switch between pathways, but it did not work well in practice. It was not offered in many schools. The current thinking may be that the Ministry is unwilling to pretend that effective transition courses can be provided. Also, students often change their minds—the courses we offer at the colleges can help students adapt later. John argued that the Intro Math 11 was a popular and useful course in his experience. Leo Neufeld noted that a number of students enrolled in Intro Math 11 to earn Math 11 credit to meet graduation requirements.

The motion was carried. (2 opposed, 0 abstentions)

Action (Susan Milner): Send a letter to the Ministry, and cc the BCAMT, BCCAT and Justin Gray.

Members were invited to contact Susan if they would like a copy of the letter.

4.5. Math Contest name change—Clint Lee

Clint announced that the preliminary round for next year will take place on Wednesday, March 1, and the final round will be held on Friday, May 5. He pointed out that since two of the founding institutions of the BC Colleges Mathematics Test are no longer colleges, TRU and UBC(Okanagan), and that the Math contest in the Okanagan will be jointly run by Okanagan College and UBC(O), the current name seems inappropriate.

Motion: (moved by Clint Lee and seconded by Judy Malcolm)

That the name of the BC Colleges Highschool Mathematics Contest be changed to the BC Secondary School Mathematics Contest.

Carried unanimously.

4.6. The state of transfer and articulation in Alberta—Leo Neufeld and Tiina Hohn

Leo Neufeld reported on his visit to Edmonton on April 30 (in place of David Leeming) to give a report on Core Calculus to a group called the North-South Dialogue at Grant McKewen College. He sat in on sessions and observed that Alberta mathematics instructors share much the same concerns about student success, calculators, etc. as we do. Leo observed that their group was similar to ours, but could benefit from having a chair to provide some focus to their organisation. He found it beneficial to hear what was said, and to contribute, just as we have benefited from Tiina's presence at our meeting this year. He pointed out that there are students that move between the two provinces, so there is a need for articulation between us.

Tiina Hohn expressed her appreciation for Leo's presentation, and for being able to attend our meeting. She described the format of their provincial meetings in Alberta. Currently colleges meet on one day and universities on another day (with colleges invited). They have an education group and there is contact between institutions, but there is no central body to address concerns. She will be reporting back to Jack Mackie of PIMS in Alberta, and will be recommending the formation of a group similar to ours.

Motion: (moved by Leo Neufeld and seconded by Jack Bradshaw)

That subject to appropriate funding, the BCcupms appoint one member at each meeting to attend an Alberta Dialogue meeting each year with the responsibility:

- a. to report to the BCcupms; and**
- b. to communicate articulation issues to the Alberta mathematics community.**

Carried unanimously.

PIMs may be willing to support this. Someone different should go each year. Ideally Alberta will continue to send reps to the BCcupms meeting as well. The next Dialogue meeting is May 6th and 7th and will be held at Mount Royal College in Calgary. Jim Bailey offered to go. If his expenses are covered by the College of the Rockies then it may be possible to send David Leeming as well with PIMS support.

Tiina shared some math anxiety reducing games that she uses with her students.

5. INSTITUTIONAL REPORTS

- **BCIT – Colin Lawrence(Technologies)**
 - Starting in September, 2005, BCIT will offer a two-year Degree Transfer Program in Science and Technology. This program will provide pathways into various BCIT technology and degree programs. On a course by course basis the program will also offer university transferability at either the first or second year level. Currently two courses MATH 1100, a Calculus 1 course, and MATH 2100, a Calculus 2 course, offered in this program have obtained articulation with the corresponding university and college courses. Articulation for MATH 3100, a probability and statistics course, is currently being sought.
 - Over the last two years BCIT has been developing a new civil engineering course leading to a B.Eng degree. Enrolment is projected to begin in September, 2005. Two courses developed by the math department will be included in this degree program, a course in Vector Calculus and another in Differential Equations.
- **CAPILANO – Wendy Lynn**
 - 1. Courses/Program**
 - On the “good news” front, both the Engineering and Engineering Transition programs continue to have strong enrollment and have positive spin-off benefits for mathematics. A math faculty member, Lisa Lajeunesse, now convenes these engineering programs.
 - On the “not-so-good news” front we experienced a modest decline (~ 8%) in math and stat enrollment in the Spring 05 Term compared to the Spring 04 Term. However in Summer 05 vs. Summer 04 the enrollment decline was considerably higher at 35% (albeit on a much smaller enrollment base). We are concerned about the potential for continued enrollment decline in Fall 05.

- With the discontinuation of Math 171, 172 at SFU, we have dropped the corresponding one-credit application courses Math 117, 127 that previously were mandatory co-requisites for all students taking our mainstream first-year science calculus courses Math 116, 126.
- Although SFU has discontinued Math 110, we have retained the business version of precalculus, Math 107, and have articulated its transfer to SFU Math 100.
- Online registration using Banner has worked reasonably smoothly for most students but has posed problems in the area of waitlists (we don't have any sort of automated waitlist management system) and stale-dating prerequisites (no longer possible).

2. Faculty

- Ted Bentley is retiring this July after 31 years at Capilano College. He looks forward to returning to the college to teach a section or two per year (if he can successfully convince the search committee to hire him back!).
- Chris Morgan is taking over from Ted as Coordinator of Mathematics and Statistics.
- The department welcomes Steve Overduin, a recent SFU grad, as a new member of the department.
- Deanna Baxter is returning from parental leave to teach part-time.
- Ian Affleck is "on-loan" to UCFV, taking a leave from Capilano.

- **CARIBOO** – See Thompson Rivers University

- **COLLEGE OF THE ROCKIES** – Jim Bailey

Enrollment is down at the College of the Rockies; two second year Biology courses have been canceled for next year which will make second year a less attractive option in general and will likely impact on second year Math numbers.

PreCalculus was offered for the first time last September, taught by Richard Hewko. Our registrar agreed to allow student to transfer from Calculus I to PreCalculus after the official deadline; students who did badly on the first midterm in week five were encouraged to make the switch and retake Calculus I in the winter semester.

- **COLUMBIA COLLEGE** – Sam Ekambaram

- According to the **Degree Authorization Act**, of May 2002, allowing private institutions to apply for degree-granting status (as public institutions do), **Columbia College**, following a thorough evaluation process conducted by the Degree Quality Assessment Board(DQAB) was given authorization to award both **Associate of Arts and Associate of Science Degrees**. We are expecting to give our first set of Associate Degree to our students in fall 2005 or in the near future.
- In Mathematics, we are offering at least one second year course every semester to facilitate students accumulate more credits to qualify for an Associate Degree in Science at Columbia College.
- This summer we are offering Math 120, Introduction to Discrete Mathematics. The number of students majoring in Computer Science/Engineering is declining and therefore there is a low enrolment in this course.
- Besides pre calculus, Math 11, MATH 12, as usual, we are offering Calculus I, II, III for Science majors and Calculus I, II for Business and Social Science majors. This summer we are offering two Second Year Courses, Linear Algebra and Calculus III.
- We are planning to articulate a second year course on Differential Equations, and general Mathematics course for Arts students. If there are students who would like to get Associate of Science Degree, then we would be articulating more second year courses in Mathematics.

- **COQUITLAM** – Bruce Kadanoff

- **CNC** – Judy Malcolm

We were very fortunate to have Dr. David Leeming present the guest lecture to the students who attended the final round of the BC Colleges High School Math Contest on May 6th.

The College Board appointed Ralph Troschke as President of CNC in September of 2004.

Enrolment in University Transfer and in the technologies is down, and as a result, there was a layoff in mathematics, reducing the number of full time positions from four to three.

The Dental Hygiene Programme has recently included Introduction to Statistics (Math 104) as a prerequisite, and the nursing students are required to take the course, so we have increased the number of sections to two per semester.

We are offering Math 100 (Precalculus) and Math 190 (Math for Teachers) in a summer institute through International Education.

- **DOUGLAS** – Wesley Snider

Enrolments have been down significantly in the last year. The decline may have been aggravated by a new college requirement of a C grade in English 12 as a prerequisite for all courses at the College. As a result of the lower enrolments, we have lost two sections over the Fall and Winter semesters.

All of our course numbers have been changed to new four-digit numbers.

Two new courses have been developed. Math 1105 (Algebra and Trigonometry) will replace Math 1115 as the prerequisite for Calculus for Social Science. The inclusion of trigonometry will also allow this course to be used as a bridging course between Basic Algebra and Precalculus (for science students). Math 1234 is Mathematics for Liberal Arts. We hope to be able to offer this course in Winter 2006. Discussions are on-going with SFU to investigate the possibility of transferring this course to their new liberal arts math course.

The College is asking us to take a look at Accuplacer as an assessment tool. We would like to thank those who responded to Susan Oesterle's query regarding assessments. The results of that query will be e-mailed by the end of June.

- **KWANTLEN** – Mike Nyenhuis

We have been developing many new courses:

Math 1116. Math for Liberal Arts has been developed, but has hit snags in being approved.

Math 1117. Environmental Mathematics has been developed. It is basically a College Algebra course for students going into the Kwantlen Environmental Protection Program. We will not be seeking articulation for this course.

Math 1152. Matrix Algebra for Engineers has been developed to help our Applied Science students transfer to UBC. We hope it will articulate with UBC as Math 152. It will be offered in Spring 2006.

Math 2335. Statistics for Life Sciences. The calendar description reads like a standard statistics course.

Math 1010. Our Introductory Algebra course, Math 1092, and Academic and Career Preparation's PSPM/ABEM 1082 have been amalgamated to form Math 1010. It may no longer qualify for ABE, but most students taking the courses that Math 1010 will replace are not looking for high school completion.

Math 1111/1113 and 1112. In addition to our present precalculus course, we will be offering a new 6 hour precalculus course, which, for funding reasons, is split as one 4 hour course, Math 1113, and a 2 hour "developmental course" (basically, a tutorial section, and more), Math 1111. Math 1113 should articulate as Math 1112 does since they have the same outlines. Prerequisites for the combined Math 1111/1113 are a C in Principles of Math 12, and prerequisites for Math 1112 are a C+ in Principles of Math 12. Math 1111/1113 will be offered this September.

Math 2331, Real Analysis, ran this Spring, started with nine students, and ended with six. There was at least one student from UBC and two from SFU. We will be offering it this Spring, so if you have students who want to take Real Analysis in the Spring of 2006 and do not mind traveling to Kwantlen Surrey Campus, send them to us.

- **LANGARA** – Nora Franzova

Langara math and stats dept. is concerned about the following articulation issues:

1. We would like to see the BC Transfer guide revised so that UBCO's transfers reflect articulation agreements with UBC instead of Okanagan University College. Very few if any of our students have transferred to OUC, so many of

our courses did not have transfer agreements with OUC, but do have transfer credit with UBC. We expect that more of our students will want to go to UBCO, so it would save a great deal of work for everyone if the BC Transfer guide could just be revised, rather than case by case corrections.

2. We are watching what becomes of UBC Commerce's implementation of their recent report recommending changes to the math content of their programs.

In stats, commerce 290 and 291 are our primary concern, since Langara students currently have to take 3 courses to gain credit for these courses. We continue to have strong enrolments in these courses, but look with some trepidation at the upcoming change to UBC COMM 290/291 quantitative courses.

3. Another BIG issue for us is the UBC Math 111 transfer credit which seems to be about to disappear. We will be discussing with UBC to see if at least Math 1253 will get 1171 credit. We offer several sections per year of courses that transfer to UBC Math 111.

4. We have a few concerns about certain specialized UBC calculus III courses (Math 267) that we can't hope to offer, but which our calculus III course does not transfer. How can we serve our students who want to transfer into UBC engineering programs that require a specialized calc III course? We are wondering if perhaps we could design a lab supplement that would be a satisfactory upgrade.

5. Math 2373 (introductory real analysis) will now be offered in the Fall semester. We have two other courses that are only offered in the Spring (calc IV and differential equations) so this makes for too much math in the Spring semester for second year students.

6. We are developing a course on Math Modelling (2nd year level) and (maybe, it depends on our Computer Science dept.) a Numerical Analysis course as well. The statistics area is looking into developing a data mining course. If any colleges offer these courses we would like to hear from you. Please contact Roger Coroas for the math courses and Cheryl Mckeeman for the stats course. rcoroas@langara.bc.ca or cmckeeman@langara.bc.ca .

7. We are continuing with our search to improve the success rates in pre-calculus and calculus I, without weakening standards.

8. We had a very successful math contest on May 6.

- **NORTHERN LIGHTS** – Hongbin Cui
There have been no changes.

- **NORTH ISLAND** – Slava Simice
Enrollments were steady in University Transfers but down in ABE except at Port Hardy campus.

In the winter semester 2005, we have offered the first time Precalculus course Mat 100.

Our Chair of Mat/Sci department, Pat Corbett-Labatt, is active in developing a provincial Math course on line for BC Campus College.

Ron Evans, who is an instructor in Bella Coola Centre, obtained the BCcampus Innovation Award for developing a course in Space, Science and Astronomy, and the on-line observatory. Students can do “hands-on astronomy” with Tatla Lake On-line Observatory (TLOO) in the same manner a modern professional astronomer would do it even though they are at home.

For the third time we have hosted a BC Colleges High School Mathematics Contest. We took the advantage of PIMS offer to sponsor our guest speaker Gary MacGillivray from UVIC. Gary and his helper Rachael played with students math games based on binary numbers. Everybody had lots of fun.

Many thanks to Jack Bradshaw from UCC for helping us with marking.

- **NORTHWEST** – Mona Izumi

We continue to offer Calculus I and II and Introductory Statistics at both Terrace and Prince Rupert. Math for Elementary Teachers is offered in Terrace and other students in the college region have access to our online offering.

Terrace will offer a first-year engineering stream this academic year. Math 235 Linear Algebra has just received approval from Education Council.

We will replace our Math 111/112 Precalculus I and II with a single semester Precalculus course, Math 115. It will be offered in Prince Rupert and possibly online.

We participated in the BC Colleges High School Math Contest for the second time. Although schools in Prince Rupert, Terrace, Smithers, and Sandspit took part in the preliminary round, we had a disappointing turnout for the final round as schools withdrew at the last minute. Smithers students wrote the final round in Smithers.

- **OKANAGAN – Clint Lee**

The Transition

As of June 30, 2005 Okanagan University College will no longer exist. In its place two new institutions will be created: the new Okanagan College and University of British Columbia, Okanagan. As a consequence, the Mathematics and Statistics Department of OUC has been split into those going to OC and those going to UBC-O. Four members of the OUC Mathematics and Statistics Department are going to OC: Dave Murray (interim chair), Clint Lee, Doug Birtwistle, and Maria Maciaszek. Two other math/stats positions are going to OC, but they are currently unfilled. All other department members are going to UBC-O: Sylvia Esterby (chair Math/Stats/Physics Department), Ed Butz, Wayne Broughton, Shawn Wang, Donovan Hare, Javad Tavakoli, Blair Spearman, Paramjit Gill, Sylvie Desjardin, Rebecca Tyson, and Qiduan Yang. Another member of the department, Phil Beckmann, has taken on the position of Dean of Science and Technology at OC, one of four academic Portfolios. The other three Portfolios are: Arts and Developmental Studies, Business, and Trades. There will be a Dean of each academic Portfolio plus a dean of each of the four campuses: South Kelowna, Vernon (Kalamalka), Penticton, and Salmon Arm.

University transfer courses will be offered at all campuses of Okanagan College, including the South Kelowna (KLO) Campus. UT has not been offered at this campus for several years, so this is going to require a significant amount of renovation with the possibility of construction of new facilities in the near future. First year UT science courses will be offered at all campuses, and a selection of second year science courses will be offered at the South Kelowna and Vernon Campuses. Two degree programs will be offered at Okanagan College: the Bachelor of Business Administration and Bachelor of Computer Information Systems. Both of these degree programs will be offered at the South Kelowna Campus.

Hiring at Okanagan College

Since only four Math/Stats faculty ended up at Okanagan College, a significant amount of hiring is required. Four additional positions are available and currently being filled. Two of these positions are Math/Physics/Astronomy positions at the Penticton and Salmon Arm Campuses, and the other two are Math/Stats positions at the South Kelowna Campus.

Transfer Issues at Okanagan College

All but one of the Math/Stats courses at Okanagan College are courses currently taught at OUC and all existing transfer arrangements for these courses have been grandfathered. The only course that will require transfer negotiations is the Calculus IV course, which had been changed to a third year course following the change made by UBC. OC will re-introduce Calculus IV as a second year course and apply for transfer where appropriate.

Admission Requirements and Prerequisites

Since Okanagan College will be a community college, the admission requirements will change from those currently in place at OUC. The stated Math admission requirement for UT science at OC is Principles of Math 12 with a C or better. Unfortunately, when this was recommended to the registrar, the interpretation was that this would also be the prerequisite for Calculus I. As a result, the current OC calendar states the prerequisite for Calculus I to be Principles of Math 12 with a C or better. Since a change to this prerequisite requires Education Council approval, it is not possible to change it for Fall 2005. But, the Math/Stats Department will formally request a change in this prerequisite for the 2006/07 academic year.

Enrollments

All campuses of Okanagan University College experienced a decline in enrollment in University Transfer courses in 2004/05. Current applications point to a possible further decline in enrollment at all campuses, except the South Kelowna Campus, for the 2005/06 academic year.

- **SELKIRK** – John Josafatow

Enrolments

There has been a decrease in first year Math enrolments over the past several years. However, there is indication that we could have a slight increase in enrolment this coming year. The second year Math enrolments seem relatively steady.

Courses

We have renamed some prep courses and will introduce a new precalculus course- Math 112. The motivation is to increase the success rates in first year calculus. As well, for the first time this winter we offered a new Statistics course-Stat 206 (calculus based).

Faculty

We hired a full time math instructor, Bevan Ferreira who comes from back East- Carleton. As well, David Feldman took a year's leave and another math instructor packed up and moved to New Zealand. So, we hired two part time faculty- Doug Henderson and Joe Hobart. As many of you probably know, Neil Coburn has been promoted to administration and is now Dean of two Schools at Selkirk. Moreover, we have a new Chair of UT Arts and Science, Carol Retzlaff.

BC Colleges High School Math Contest

We had one local high school (J.L. Crowe in Trail) writing the Math Contest. A total of 12 students wrote.

- **SFU** – Justin Gray

1. New Department Chair: Tom Archibald

2. New Faculty:

Tenure Track – Jason Bell, Razvan Fetecau, Jonathan Jedwab, Yoonjin Lee, Marni Mishna, Bojan Mohar, Adam Oberman, Abraham Punnen, Stephen Tamon, JF Williams

Lecturers – Petra Menz, Natalia Kouzniak, Randall Pyke

3. New Program: Industrial Mathematics and Operations Research (Surrey Campus)

4. Program Proposal: Mathematics and Computing Science Joint Major

5. Discontinued Courses:

MATH 171/172 (Computer Explorations in Calculus I and II)

MATH 161/162 (Honours Supplement for Calculus I and II)

MATH 110 (Precalculus for Business and the Social Sciences)

6. Revised Business Calculus Courses: The syllabi for MATH 157/158 has been revised to follow the recommendations of the BCCUPMS Core Calculus Committee.

7. New Courses Proposals:

MATH 150 (Calculus I) – a 4 credit variation of our regular Calculus I course with a brief review of precalculus material

MATH 130 (Geometry for Computer Graphics) – Tech One program only

MATH 210 (Calculus for Design Sciences) – Tech One program only

MATH 254 (Vector & Complex Analysis for Applied Sciences)

In addition to the courses listed above, there will be several new courses in place over the next two years, as there will be a high demand for science breadth courses, primarily for Arts students, when our new curriculum requirements take effect in Fall 2006. (See http://www.sfu.ca/ugcr/General_Interest/UCI_Task_Force_and_Support_Groups/UCITF/ for more details on the new requirements)

8. Quantitative Support: Beginning in Fall 2006, all incoming students will be required to take two courses which are designated as quantitative-intensive (Q). We are currently developing a quantitative assessment test in order to assess students' readiness to take such courses. In addition, we are developing a Quantitative Support Centre and a set of high school level courses to prepare students to take a variety of Q courses.

- **Thompson Rivers University** – Jack Bradshaw

General: On April 1, 2005, University College of the Cariboo melded with the B. C. Open University to become Thompson Rivers University.

Department: The business calculus courses, Math 140/141 are being replaced by 2 new courses. Math 1xx replaces Math 140. The course will include some integration. Math 1yy replaces Math 141. The main topics in the new course will be linear programming, probability and math of finance.

- **UBC** – Wayne Nagata

1. The UBC Mathematics Department has recommended to the UBC Admissions office that transfer credit for UBC MATH 111 no longer be given. MATH 111 was a six-credit course combining pre-calculus material with calculus, and it is no longer on the list of UBC course offerings. The intent is that students with credit for calculus courses should still be able to obtain transfer credit, but credit for pre-calculus courses should not transfer to UBC. The details of this change have still to be worked out, as articulation agreements that involve this course will have to be renegotiated.

2. The UBC Faculty of Commerce has proposed reducing its calculus requirement to just UBC MATH 104 (Calculus 1 for Business). At present both Calculus 1 and 2 (UBC MATH 104 and 105) are required. This proposal has passed the UBC Senate Curriculum level, and is expected to come into effect for students entering in September 2006.

3. UBC-Okanagan will begin in September 2005. There is still little explicit information available on how courses will transfer between UBC-O and UBC-Vancouver. Apparently the existing transfer agreements between OUC and UBC(-V) for first- and second-year courses will continue, and transfer of credits for third- and fourth-year courses will be treated as if UBC-V and UBC-O were independent universities. There seems to be little change from the present situation regarding transfers.

- **UCFV** – Susan Milner

1. We have generally maintained or increased student numbers this year. Some highlights:

- Two extra sections in pre-calculus were offered. This seems to be a fast-growing area.
- The number of sections of developmental math was down by one.
- Probability and statistics (second year course for those with calculus) had a record number of students.
- Enrolment in upper level courses, both mathematics and statistics, increased.
- The online course in introductory statistics is so popular that another section will be offered in the winter term next year.
- There is still strong demand for first-year courses in introductory statistics and in mathematics for elementary education: two extra sections in these areas were offered.
- An extra section of the course in calculus for business students was offered in winter. This course is now available in both the fall and winter terms.
- The new 400-level history of math course broke the record for enrolments in a 400-level math course. It was a very positive experience for all concerned.
- Summer 2005 course offerings have more than doubled, compared with the 2004 spring offerings of five 100-level courses. This summer we are offering two additional 100-level courses, a 200-level directed studies course in discrete math and three upper-level courses in operations research and applied statistics, giving us a total of eleven courses.

2. New courses and new directions

- A new analysis stream is in the approvals process. This new three-course sequence will replace the current two-course sequence. Students will begin their analysis in second year with a general course that is central to studies in math, containing set theory, induction, introduction to proof, etc. In third year students will follow the usual path through analysis, developing their skills in proofs. Both the second- and third- year courses will be required for the math major, the math extended minor and the math minor. A fourth-year course in analysis will also be offered for students who have an interest in the area. The first course in the new analysis stream will be offered in Winter 2006.
- New upper level statistics courses in regression, in theoretical statistics and in time series analysis have been developed: the first is being offered this summer and the second will be offered in the fall term. The plan is to offer in alternate years the applied statistics stream and the theoretical statistics stream.
- A new upper-level course in ordinary differential equations (ODE's) has been developed. This course concentrates on theoretical properties rather than on mechanical detail and is a follow-up to the second-year course in ODE's.
- A new framework has been developed that enables students to study (under supervision) any mathematical area of mutual interest to the student and the supervisor.

3. Other news

- A statistical consulting unit has been formed. This unit consists of three statistics instructors who are will use their knowledge and experience in statistics, especially applied statistics, to help students, faculty and others in the local community with their research projects. Fees are on a sliding scale. Research opportunities are another possible spin-off.
- The Math Centre is so popular that it will be necessary to start thinking about more space —possibly a Stats Centre, which might also house the statistical consulting unit mentioned above.

• UNBC – Kevin Keen

There is no report from the Mathematics Department. Enrolments are steady.

• UVIC – Gary MacGillivray

We will be going ahead and revamping our Calculus I from 4 hours per week down to 3 hours per week. We will be doing the same for our Pre-calculus. Otherwise, enrollment is stable but the areas the students come from are changing. Numbers were down in Computer Science and Engineering, and up in Business and Economics. We have a strong contingent of students coming through Physics. The number of Math honours students is increasing too.

• VCC – Costa Karavas

- The Mathematics Department is currently offering three first-year UT courses:
 - Calculus I (Math 1100)
 - Calculus II (Math 1200)
 - Introduction to Statistics (Math 1111).
 - One section of each course is offered three times a year. Enrolment in the UT courses has steadily grown since last year with class capacities ranging from 20-25 students/class.
- Demand for *Introduction to Statistics* has increased as the course is a prerequisite for the Dental Hygiene Program.
- The Mathematics Department continues to experience strong demand for upgrading math courses at the grade 11 and grade 12 levels, as well as increased enrolment in Calculus I and II.

• Yukon College – Tim Topper

There were no big changes this year.

6. COMMITTEE BUSINESS:

6.1. Theme for our 84th meeting

There were several suggestions for themes for our next meeting: math for teachers, assessment tests, business calculus, precalculus, linear algebra (core curriculum?), or multi-variable calculus. Susan will send these ideas out in January to see what people would like to talk about. Another suggestion was that we bring textbook lists next year.

6.2. Date and location of the 84th meeting

UVIC offered to host the next meeting: May 16, 17, and 18, 2006. Note that this is on a Tuesday, Wednesday and Thursday. The Math contest problem creation session will take place after the meeting, on Thursday afternoon and Friday morning.

6.3. List updates: telephone, e-mail, and fax (circulated)

6.4. BCcupms web site—Leo Neufeld/Ian Affleck

Ian Affleck will be taking over as Web Master for the BCcupms website. The computer which hosts the website is shutting down in June and the site will be moved to a different computer at BCCAT, which will be its permanent home. Leo will oversee this transition. Leo commented that he gets positive feedback from all over the world on the site. Susan Milner, on behalf of the entire committee, thanked Leo for the wonderful job he has been doing.

7. ADJOURNMENT OF THE FRIDAY SESSION

The Friday Session of the 83rd meeting of the BCcupms adjourned at 4 p.m.

Many thanks to Mona Izumi (and all who assisted her) for the wonderful job she did of hosting our 83rd meeting!

List of Committee Members Present: Plenary Session - Thursday, 2005-05-26 (a.m/p.m); Mathematics Session -Thursday, 2005-05-26; Stats Sub-Committee Session- Thursday, 2005-05-26; Secondary Teachers Session – Thursday, 2005-05-27; Plenary Session - Friday, 2005-05-27

Name	Institution	THUR	MATH	STATS	TEACHER	FRI
Jim Bailey	College of the Rockies (Vice Chair)	X	X		X	X
Jack Bradshaw	Thompson Rivers University	X	X		X	X
Hongbin Cui	Northern Lights College	X	X		X	X
Brian Draper	Caledonia Senior Secondary-- Prince Rupert	a.m.	X			
Sam Ekambaram	Columbia College	X	X		X	X
Derrick Force	Prince Rupert Secondary				X	
Nora Franzova	Langara College	X	X		X	X
Marc Garneau	BC Association of Mathematics Teachers	X	X		X	
Justin Gray	Simon Fraser University	X	X		X	X
Tiina Hohn	Grant MacEwan College, Edmonton, Alberta	X	X		X	X
Mona Izumi	Northwest Community College	X	X		X	X
John Josafatow	Selkirk College	X	X		X	X
Bruce Kadonoff	Coquitlam College	X		X	X	X
Costa Karavas	Vancouver Community College	X		X	X	X
Kevin Keen	University of Northern BC	X		X	X	X
Colin Lawrence	BC Institute of Technology	X		X	X	X
Clint Lee	Okanagan College	X	X		X	X
David Leeming	University of Victoria	X	X		X	X
Alex Liu	Kwantlen University College	X		X	X	X
Wendy Lynn	Capilano College	X	X		X	X
Gary MacGillivray	University of Victoria					X
Judy Malcolm	College of New Caledonia	X	X		X	X
Wayne Matthews	Camosun College	X	X		X	X
Susan Milner	University College of the Fraser Valley (Chair)	X	X		X	X
Fred Mistry	North West Community College	X				
Wayne Nagata	University of British Columbia	X	X		X	X
Leo Neufeld	Camosun College (Retired)	X	X		X	X
Michael Nyenhuis	Kwantlen College	X	X		X	X
Susan Oesterle	Douglas College (Secretary / 83rd Meeting)	X	X		X	X
Yuriko Riesen	North West Community College	a.m.		X		
Ada Sarsiat	North West Community College/ABE Representative	a.m.	X			
Slava Simice	North Island College	X	X		X	X
Wesley Snider	Douglas College	X	X		X	X
Tim Topper	Yukon College	X	X		X	X
Eric Turner	North West Community College	p.m.	X		X	
Gary Tupper	Pedagoguery Software	a.m.	X		X	
Lang Wu	University of British Columbia-- Statistics	a.m.		X		X
Erfan Zahrai	North West Community College	X	X		X	X

List of Participants (Mathematics Workshops – Saturday, 2005-05-28)

Jim Bailey	College of the Rockies (Vice Chair)
Jack Bradshaw	Thompson Rivers University
Nora Franzova	Langara College
Tiina Hohn	Grant MacEwan College, Edmonton, Alberta
Mona Izumi	Northwest Community College
John Josafatow	Selkirk College
Bruce Kadanoff	Coquitlam College
Costa Karavas	Vancouver Community College
Clint Lee	Okanagan College
David Leeming	University of Victoria
Wendy Lynn	Capilano College
Judy Malcolm	College of New Caledonia
Wayne Matthews	Camosun College
Susan Milner	University College of the Fraser Valley (Chair)
Leo Neufeld	Camosun College (Retired)
Michael Nyenhuis	Kwantlen College
Susan Oesterle	Douglas College (Secretary / 83rd Meeting)
Slava Simice	North Island College
Wesley Snider	Douglas College
Tim Topper	Yukon College
Jeff Tupper	Pedagoguery Software
Gary Tupper	Pedagoguery Software
Erfan Zahrai	North West Community College

List of Participants (Statistics Workshops – Saturday, 2005-05-28)

Hongbin Cui	Northern Lights Community College
Costa Karavas	Vancouver Community College
Kevin Keen	University of Northern British Columbia
David Leeming	University of Victoria
Alex Liu	Kwantlen University College
Lang Wu	University of British Columbia

BC Colleges High School Mathematics Contest 2005 Report to the BCCUPM

On May 6, 2005 the Final Round of the BC Colleges High School Mathematics Contest was written at 11 provincial colleges and university colleges. Students who had performed well on an earlier preliminary round held within their own high schools were invited (together with a teacher sponsor) to attend the final round and spend a day at the local college with several activities involved.

This year the participating colleges and university colleges were:

- Camosun College (Cam)
- Capilano College (Cap)
- College of New Caledonia (CNC)
- Langara College (Lang)
- Malaspina University College (MUC)
- North Island College (NIC)
- Northwest Community College (NWCC)
- Okanagan University College (OUC)
- Selkirk College (Sel)
- University College of the Cariboo (UCC)
- University College of the Fraser Valley (UCFV)

The table below gives a summary of the number of students and the top scores in the final round at each institution.

Institution	Final Round		Top Three Scores		Averages	
	Juniors	Seniors	Junior	Senior	Junior	Senior
Cam	22	12	76, 71, 70	90, 87, 83	51	62
Cap	25	26	83, 81, 78	100, 100, 95	54	68
CNC	23	29	67, 44, 41	92, 74, 67	N/A	N/A
Lang	14	14	90, 85, 80	100, 95, 95	69.5	82.5
MUC	36	30	91, 60, 56	100, 90, 89	34	56
NIC	17	14	49, 46, 46	70, 68, 67	33	41
NWCC	8	4	67, 43, 35	74, 56, 55	35	57
OUC	42	27	70, 62, 57	80, 79, 70	33	50
Sel	7	5	58, 43, 42	63, 62, 46	41	50
UCC/TRU	32	33	74, 72, 65	87, 76, 70	51	46
UCFV	51	31	74, 72, 69	94, 82, 76	36	59
TOTAL	277	225				

Approximately 1550 Juniors and 800 Seniors wrote the Preliminary Round this year. The top Junior Preliminary score was 71 and the top Senior Preliminary score was 75. Note that not all schools report Preliminary Round Scores. A total of 502 students participated in the Final Round this year.

The Preliminary Round is handled in essentially the same way at all institutions. The preliminary test papers are mailed to participating schools. The tests are administered and marked at the schools and the results, including the names of the Final Round participants, are transmitted to the hosting institution. The Final Round does have variations. At all institutions the Final Round contest was administered on the morning of May 6, with some type of activity provided for the sponsoring teachers, and, after the contest is completed, lunch is provided for all participants. After lunch the activities vary. Some institutions have talks for the participating students and teachers, others combine talks with other activities, such as a math relay, while others have more strenuous activities, such as basketball math. During the time that the afternoon activities take place, the tests are marked, and later in the afternoon prizes are awarded. The prizes vary among institutions. Some institutions give book prizes to all or selected participants; some institutions give cash prizes and/or scholarships to winners; many give T-shirts to all participants.

Thanks should go to those who have been involved in organizing their own college faculty to get on board, and have also been actively enlisting the local teachers to encourage involvement of their high schools. First there are the primary contacts at each of the Colleges: Wayne Matthews at Camosun College; Marsha Anderson at Capilano College; Judy Malcolm at College of New Caledonia; Roger Coroas at Langara College; Patrick Ng at Malaspina University College; Slava Simice at North Island Community College; Mona Izumi at Northwest Community College; Clint Lee at Okanagan University College; Doug Henderson at Selkirk College; Susan Milner at University College of the Fraser Valley; and John Siggers at The University College of the Cariboo. Although these are the primary contacts at each institution, it goes without saying that they did NOT do all the work required to make this contest a success. Indeed, they have indicated that their entire departments were involved with hosting the contest. Special thanks should go to John Grant-McLoughlin of University of New Brunswick, who, as a professor in Mathematics Education, continues his involvement with our contest even though he is on the other side of the country and brings the rest of us back to reality regarding what we can reasonably expect high school students to be able to handle.

Furthermore, the problem posers who either submitted problems or came together at the University College of the Fraser Valley in Abbotsford last May to put together the initial draft of all four contest papers are: Wayne Matthews (Cam), Jim Bailey (COTR), Judy Malcolm and Edward Dobrowolski (CNC), Clint Lee and David Murray (OUC), Susan Milner and Kevin Keen (UCFV), Lisa Lajeunesse (Cap), Mona Izumi (NWCC), and John Siggers (UCC).

In addition, those who proof-read the contest are: Clint Lee (OUC), John Siggers and Don Desbrisay (UCC), John Grant McLoughlin (UNB), Dave Murray (OUC), Susan Milner (UCFV), Nicholas Buck (CNC), and Jim Totten (UCC). The solutions were prepared and typeset by Jim Bailey (COTR), Nicholas Buck (CNC), and Dave Murray (OUC). The final compilation and typesetting of the contest papers and solutions was done by Clint Lee, who also is responsible for distributing the contest materials to all of the participating post-secondary institutions.

Apologies to anyone whose name may have been inadvertently left out.

For those planning for next year the suggested dates for the 2006 contest are:

Preliminary Round:	Wednesday March 1 or March 8, 2005
Final Round:	Friday May 5, 2005

Respectfully submitted to the BCCUPM on May 26, 2005 by

Clint Lee