

**MINUTES OF THE STATISTICS SUBCOMMITTEE
85TH BCCUPMS MEETING, MAY 15 – 17, 2007**

WEDNESDAY, MAY 16TH, 2007

Present: Deanna Baxter (Capilano College), Bruce Dunham (University of British Columbia Vancouver), Bevan Ferreira (Selkirk College), Al Fukushma (Nicola Valley Institute of Technology), Colin Lawrence (British Columbia Institute of Technology), Tom McBee (Yukon College), Geoff Salloum (Camosun College), Jill Simmons (University of Victoria), Dean Slonowsky (Malaspina University-College), Larry Weldon (Simon Fraser University).

Regrets: Veda Abu-Bakare (Langara College and Thompson Rivers University – Open Learning Institute), Kevin Keen (University of Northern British Columbia).

Chair: Bruce Dunham

Acting Secretary: Geoff Salloum

1. Approval of Agenda

Motion: That the agenda be adopted as proposed with the addition of a conversation on academic misconduct added to item 9. Moved by Bevan Ferreira and seconded by Colin Lawrence. **Carried unanimously.**

2. Approval of minutes from the Statistics subcommittee meeting from the 84th meeting.

Motion: That the minutes of the Statistics subcommittee from the 84th Articulation meeting be adopted with the following changes: the dates on page one are changed from 2005 to 2006, and MSc is substituted for Ph.D. on page ten. Moved by Larry Weldon and seconded by Bevan Ferreira. **Carried unanimously.**

3. Matters arising from minutes.

- Last year's recommendation that Statistics courses carry the label STAT as opposed to MATH was reiterated.
 - It was noted that this is difficult for smaller institutions that do not have a Department of Statistics.
 - Receiving institutions with a Department of Statistics fear that problems could arise if BCCAT incorrectly sends articulations to their institution's Mathematics Department.
- The possibility was raised last year of the Statistics Subcommittee meeting in

Vancouver apart from the Mathematics Subcommittee on the alternate years when BCCUPMS is held away from the Lower Mainland. This was again briefly discussed:

- As a result of the good attendance at the current meeting in Whitehorse and a number of other concerns, no support was shown for having a separate Statistics subcommittee meeting in the Lower Mainland.
- It was noted that we should encourage smaller institutions who only send one representative to the BCCUPMS meeting to consider sending a statistician every second or third year.

4. **General issues regarding articulation and transfer for Statistics courses.**

- In the past the system for processing articulation requests at UBC had been inefficient, creating a sizeable backlog of pending requests. The process has been improved considerably in the last year, and it was noted that recent requests have been processed quickly. It was suggested by the Chair that any outstanding articulation requests submitted to UBC more than one year ago which have not been acted upon should be re-submitted, and would be dealt with promptly. Moreover, should institutions wish to obtain informal feedback about an articulation with a STAT course at UBC they are welcome to contact Dr. Dunham directly.
- Receiving institutions would ideally like to see the following components included in a request for transfer credit:
 - Detailed breakdown of syllabus including the depth of each topic (by number of class hours, for example)
 - Textbook or proposed textbook(s)
 - Evaluation method and a sample final exam (if possible)
 - Prerequisite(s), preferably with a website link to the relevant course description(s).

Note that articulating courses do not need to be identical in content, but an 80% overlap is the "rule of thumb". SFU and UBC are willing to provide syllabi and past exams for their courses. Institutions may e-mail Larry Weldon or Bruce Dunham if required information cannot be found on the web pages of their respective departments.

- SFU requires students to take both Stat 270 and Stat 285 before they can declare a Statistics major.
- BCIT has not received a response from SFU regarding their Probability and Statistics for Applied Science (3100) course. This will be resent to Larry Weldon.

5. **Future developments**

- 1 Larry Weldon highlighted the need for "writing courses" in Statistics, briefly discussing his STAT 300W at SFU. This course was found to be very useful for students' understanding even though the course was based on Statistics material from earlier courses.
- 2 Selkirk College has changed their prerequisite from a C in Math 12 to a C+ in

Math 11. This will require a new articulation, though should be unproblematic.

- 3 UBC is creating a new course called STAT 100: Statistical Thinking. The course should run for the first time starting in January 2008, and is open to anyone with Math 12. Due to the somewhat novel approach adopted, STAT 100 is not likely to admit transfer from any existing courses in BC. The new course will be modular in nature; two modules on statistical literacy and probabilistic reasoning will form a foundation for the four other modules, each of which will focus on an application area or statistical theme. An aim is to expose first year students to the relevance of Statistics in current research, whilst also illustrating some modern statistical techniques in an informal fashion.
- 4 Since 2002, SFU has been running a course somewhat comparable to the new UBC course described above, also called STAT 100. The intents of the courses are broadly similar, but the delivery methods differ. Departments throughout SFU accept STAT 100 as a Statistics requirement and enrolment is approximately 100 – 150 students per year.
- 5 Under the auspices of the Carl Wieman Science Education Initiative (CWSEI), UBC's STAT 200 is being transformed. The topics covered in the course are unlikely change, but the method of delivery will be revamped, to be more interactive with the students. For example, the use of "Personal Response System" (PRS, sometimes referred to as "Clickers") will be trialed. Learning outcomes for the course will be formally identified, and these will be discussed within the Statistics community in BC prior to finalisation. Bruce Dunham will report on the developments at the 2008 meeting.

6. Institutional reports

British Columbia Institute of Technology

Questions have been raised about the possibility of articulating Engineering Statistics courses with university courses. UBC, SFU, and UVic responded favourably. BCIT's MATH 7195 which is calculus based could articulate with UBC's STAT 241/251, SFU STAT 270, and UVic STAT 254. The text used for most if not all these courses is Devore but the Miller and Freund text was mentioned by UBC. One word of caution that, when establishing the articulation of Statistics courses with MATH numbers (like at BCIT), it is wise to make it apparent that the documents should be referred to the university Statistics department.

Camosun College

Camosun has implemented (starting September 2007) a college-wide standard grading system to be used for all courses. The most significant changes seem to occur within the "A" range, where [80,85) will now be considered an "A-" and [90, inf) will be considered an "A+." With respect to Statistics courses, enrolment was similar to last year with the exception of a greater number of students in Math 219 (Probability and Statistics 2). One

of our current courses, Math 116 - Elementary Statistics, will have one section offered in the Fall that is fully online using Desire2Learn. Students will be required to pass the final exam to pass the course, and they must write the final exam in person at the college.

Malaspina University-College

There are plans to implement a second year calculus-based first-course in Statistics and Probability, primarily aimed at students transferring to the Uvic Engineering program (since Malaspina UC now offers the first two years of Engineering). However, due to budgetary and other reasons the development has been postponed.

Selkirk College

Prerequisite changes: Prerequisites for some of our courses will be changing as of September 2008. Our elementary Statistics course for non-majors, STAT 105 will have a change from Principles MATH 12 with a C or equivalent to MATH 11 (either Principles or Applications) with a grade of C+ or equivalent. Our Introductory Calculus course MATH 100 will have its prerequisite increased to Applications MATH 12 with a grade of C+ or better, from its current Applications of MATH 12 with a C or better.

Delivery: Beginning in Fall 2007, STAT 105 will also be available online, on Moodle, Open Source. After having very low enrolment in Fall 2007, STAT 206 will be offered once again in the Winter semester. The 'R' statistical software package will be used for STAT 206 beginning in Winter 2008, time permitting.

Enrolment: This continues to be a problem for all our second year Mathematics and Statistics courses. Enrolment in our first year courses remains steady however. It is anticipated that enrolment in STAT 105 will increase in Fall 2008, due to the Business Administration diploma program soon to be requiring an Introductory Statistics course in the first year.

We continue to search for ways to deliver a full second year in Mathematics and Statistics at the College in a cost-effective manner.

Simon Fraser University

1. New Course – STAT 300W – Statistics Communication

The course objective is to improve the verbal communication skills of students. We use combination of class discussion, student presentations in class, and written draft reports that are critiqued and re-submitted for final grading. The course is taken by majors/honors in statistics. A paper was written about the content and assessment and is available from K LW (weldon@sfu.ca).

2. STAT 100 – This is not a new course but its role is unusual. It is intended for all students including potential stat majors. It is a case study course that covers a much broader list of topics than a typical service course (e.g. examples of survival analysis,

spatial distributions, diversification of investments, etc.). It does not drill students in inference techniques.

3. **Admission to major.** Students are now able to declare a major in statistics at any time, including during the process of admission to SFU. The former practice was to require students to have B- average in STAT 270 and STAT 285. Now the same criteria that were used for admission and being applied for continuation in the major – once a student has a mark for STAT 285, if they do not have a B- major in STAT 270-285, they are removed from the major. There are variations of this explained on our website (www.stat.sfu.ca) for transfer students. A completely different system is used for admission to the actuarial science major – entrance is very competitive.

4. **Prerequisites for STAT 402 (Generalized Linear models)** The old prerequisites were STAT 350 or STAT 302. Now it is STAT 350 only. STAT 302 is a service course following STAT 101 and is not an adequate preparation for STAT 350.

5. **Management and Systems Science Program** This undergraduate degree program, is a combination of Math, Bus, Comp Sci, Stats, and Econ courses. It will be managed from the Surrey campus and eventually will be absorbed by the Industrial Math program.

6. **Online Stat 101** – This course has been running for many years. Those generating online stats courses may wish to consider the FirstClass platform, which has worked well for us at SFU. (www.centernity.com)

7. **BCcupms Contact for SFU:** Robin Insley (insley@sfu.ca)

University of Victoria

This year, Mak Trifkovic (Number Theory) and Junling Ma (Mathematical Modelling) joined the department. In addition, Ryan Budney (Topology and Geometry) will join us July 1. We are in the process of hiring our fourth Senior Instructor. We expect to be hiring in Financial Mathematics, in Applied Mathematics and possibly another Senior Instructor, next year.

Enrollment is steady: weak in service to Computer Science and Engineering, but strong in service to Business. In fact, Math 151 (Finite Mathematics) is currently our largest enrollment course. The demand for pre-calculus is fairly stable. It increased a bit when we introduced our placement test several years ago. This year we have offered six sections (capacity 60). Next year the number of sections is expected to be between five and seven.

Math 140 (Math for Economics and Econometrics) was introduced to replace Math 103. This new course covers more linear algebra and less linear programming than did the previous one. Math 122 (Logic and Foundations)

became a required course for all Mathematics degrees, most combined Math degrees, and an honours Statistics degree. The prerequisite for Math 362 (Number theory) is now Math 122 or Math 233C (Introduction to Algebra).

This past year we had many third and fourth year statistics courses added to the calendar: Stat 355, 357, 359, 455, 456, 457, 458, and 459. The fourth year courses are the result of assigning a number to courses previously offered as topics courses under the number Stat 454, while the third year courses are new. The listed courses also appear in the new 2007/2008 calendar. While some of them were offered this past year, others will be offered for the first time in the coming year. With regards to the third year courses, we offered our new course in Data Analysis (Stat 359) for the first time this year, and it was successful and popular. We will be offering the other two new third year statistics courses for the first time next year: Statistical Methods in Biology and Medicine (Stat 355) and Statistical Methods in Quality Assurance (Stat 357).

New for 07/08, we are offering a Combined Major in Mathematics and Economics program. With this new program also comes the addition of a couple of courses: Math 348 (Numerical Methods with Applications in Finance) and Math 477 (Stochastic Financial Modelling).

We are also working on a new program in Mathematics Education (which would lead to a B.Sc. in Math and a teaching certificate) and a new program in Computational Mathematics. We expect to introduce these programs over the next year or so. Another curriculum proposal coming forward is for a third-year course on the Philosophy of Mathematics. It will be cross-listed as a Philosophy course.

University of British Columbia

Following on from the recent arrival of UBC President Prof Stephen Toope, the Science Faculty appointed a new dean, Prof Simon Peacock. Another notable appointment is that of Prof Carl Wieman, a Nobel prize-winning physicist, who will spearhead the Carl Wieman Science Education Initiative (CWSEI), a faculty-wide project to improve undergraduate science education at UBC.

The Statistics department has enjoyed a good year, with numbers on UG STAT courses seeming to increase somewhat despite a small drop in the number (to 26) of Statistics specialists graduating compared to 2005/06. Two new faculty members have been appointed: Prof Jihua Chen, as a full professor and Canada research chair, and Ms Eugenia Yu, a lecturer. This takes faculty numbers up to fifteen. Applicants for a one-year lecturing position were being considered at the time of writing.

Two other recent developments are worthy of note. A new first-year course, STAT 100, has been approved to commence in the Winter term of 2007/08. The course is entitled "Statistical Thinking" and will be modular in nature, with each module focusing on a particular aspect or application of the discipline. The department was also successful in securing funding from the CWSEI, the initial project involving a "transformation" of our STAT 200 course. The transformation will incorporate identification of learning

goals, development of alternative teaching methods and assessments of students' perceptions of Statistics and how they learn within the discipline. The academic community within BC will be kept abreast of developments on this, and consulted when appropriate.

7. Discussion of Math 10-12 curriculum revision and status of provincial exam

Statistics has been removed from the stream that will in effect replace the current Principles of Math 12, the course taken by most science/engineering students. This move is in keeping with the previous recommendations of this subcommittee, which indicated that a detailed study of Statistics is probably best deferred until after grade 12.

8. Statistics resources on the Web

- The International Association for Statistical Education (IASE) was mentioned as a useful resource that can be found at <http://www.stat.auckland.ac.nz/~iase/>.
- Further discussion of resources was postponed until workshop on technology the following day.

9. Other business

- 1 A request for an alternative text to Devore's Probability and Statistics for Engineering and the Sciences was made. Miller & Freund's Probability and Statistics for Engineers was mentioned, but not entirely endorsed.
- 2 A number of issues related to academic misconduct were discussed. The book "Ivory Tower Blues: A University System in Crisis" by James Côté and Anton Allahar was suggested as background reading on the matter. Further discussion was postponed to workshop on evaluating examinations.
- 3 Anyone who would like to join the Statistics e-mail distribution list should send a message to salloumg at camosun.bc.ca.

10. Motion to Adjourn

Larry Weldon moved to adjourn. **Carried unanimously.**