

MINUTES
ENGINEERING ARTICULATION COMMITTEE MEETING
FRIDAY MAY 11th, 2007
SIMON FRASER UNIVERSITY, SURREY CAMPUS

1. NEXT MEETING

THURSDAY May 1st, 2008 – College of New Caledonia, Prince George
Host: Barbara Rudecki

2. SELECTION OF A NEW CHAIR

Tom McMath has accepted to become the chair of the engineering articulation committee for next year. Peter Mulhern of UCFV as well as Bernadette Currie of Capilano have indicated that they might be interested in becoming chair the following year.

3. LIST OF PARTICIPANTS

Normand Fortier	TRU
Dennis Oldridge	TRU
Paula Scott	SFU
Rich Chambers	SFU
Diane Mackay	SFU Surrey
Arnold Sikkema	Trinity Western University
Robin MacQueen	Langara College
Bruce Dunwoody	UBC
Barbara Rudecki	College of New Caledonia
Peter Jackson	UNBC
Kuros Gadareh	Douglas College
Peter Mulhern	UCFV
Lisa Lajeunesse	Capilano College
Bernadette Currie	Capilano College
Richard Christie	Okanagan College
Elroy Switlishoff	Selkirk College
Derek Wakefield	Camosun College
Tom McMath	Kwantlen
Brian Carr	Kwantlen
Carmen Ciubotariu	Kwantlen
Paris Polydorou	Malaspina
Poman So	UVIC

**4. Presentation –Mechatronic Systems Engineering Program, SFU
Surrey**

Dr. Farid Golnaraghi, Director
mfgolnar@sfu.ca

Engineering Science at SFU is pleased to be offering Mechatronic Systems Engineering exclusively at the SFU Surrey Campus beginning Fall 2007. We are in the process of admitting BC12, college & internal transfers into the program. The admission criteria for MSE transfer students are equivalent to that of the Burnaby campus. We will work with the colleges closely to communicate the specifics of college transferability as we continue to develop the new program.

Dr. Farid Golnaraghi has developed the 4 year curriculum which includes specialized Mechatronics courses coupled with the core engineering and science offerings as well as a unique entrepreneurship/business component. MSE will also have an integrated co-op component (min. 3, four month work terms).

Questions/Comments for SFU:

- General feeling from students is that SFU is too rigid and does not recognize enough courses as transferable. It is also frustrating that SFU needs exact matches. When evaluating courses for transfer does SFU consider the 80% course material approach?
- Are Applied Communication courses recognized as TechOne courses?
- Is Chemistry 120 (offered in 1st semester) equivalent to General Chemistry at the college level?
- Is SFU open to 2nd/3rd year students transferring to either their Burnaby or new Surrey Programs?
- We have also received Kwantlen's request to review the Chemistry courses as well as contact from TWU.

***Please know that these inquiries and others will be brought forward to the SFU Engineering Undergraduate Curriculum Committee on June 7th. The UCC Chair, Dr. Albert Leung, has been consulted and will be following through with specific individuals on the Articulation Committee in the coming weeks.

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5. INSTITUTIONAL REPORTS

TRU (Dennis Oldridge)

See attached report

Okanagan College (Richard Christie)

See attached report

College of New Caledonia (Barbara Rudecki)

Declining enrollment. 13 students in Applied Sciences. UBC/UVIC transfers: The majority of students go to UBC.

Physics – more students taking 101/102

Statics – 2 students.

Partnership with TRU, flexibility to transfer to TRU (course to course). Dual program, part CNC, part TRU.

New Medical Lab Technology Program, first class early 2008 – high demand. Northern Health, BC Government, CNC partnership.

Douglas College (Kuros Gadareh)

Low enrollment especially in Physics area. Lowest enrollment numbers are at the David Lam Campus.

CAD programs dropping significantly
 Stat/Dyn lower enrollment as well.
 Lost Physics lab at David Lam Campus.

Regularly inviting P.Eng's from industry (e.g. Westport Innovations) to speak to students.
 Possible partnerships with Angiotech.

What would be useful in order to attract more students: Guarantee from SFU (like UBC), once students finish a series of courses they are guaranteed admission to SFU.

Trades Program is quite successful, hoping to offer CAD side to students.

See attached report

Langara (Robin MacQueen)

Enrollments weaker, lower wait lists but not catastrophic. Engineering Physics 170, 60 students per year. In Fall 2007 implementing lower entry requirements to B's for high school courses. Regularly invite industry rep's to give presentations.

See attached report

Camosun (Derek Wakefield)

See attached report

UNBC (Peter Jackson)

UNBC/UBC joint program Environmental engineering.

7 students all got jobs.

Informal accreditation visit took place this year.

Visitor's report very positive, June visit of CEAB.

23 accepts on 34 offers of admission out of a total of 59 applicants.

Expect 25 in Fall 2007.

Split between BC12 graduates & trsfr students.

Straight transfer works as a science program. Stumbling block has been biology 1st year requirement (Bio 11 or Bio 12, students may not have it). Advanced credit in Math, changing Bio requirement. Flat enrollment, new buildings, structural deficit.

See attached report

UCFV (Peter Mulhern)

Demand is slightly up – 50 applicants this year, 40 last year. Finding ways to increase enrollment. 36-40 actively wanting to go to UBC or UVIC. Demographics result in the valley being the only place left in Lower Mainland where enrollment numbers are increasing.

1st year class size – 36 (average), double sections up to 72. Engineering – 36 approx, lecture/lab component.

Administration is supportive of trades, sciences, and engineering and want to grow these areas (bridging programs, expanding number of first year agreements, etc.).

UBC/UVIC 1st year is common, seamless transfer to UVIC as well, would like to look into SFU. Spending a lot of time in the high schools, pleased to be invited back to promote the sciences, technology, and engineering.

UCFV is in the midst of hiring the first Dean of Science in UCFV's history, anyone you know who would might be interested in the position please encourage them to apply.

See attached report

Malaspina (Paris Polydorou)

Agreement with UVIC established in February 2006 - equivalent of 2nd year electrical and computer engineering, 1 student going to 3rd year UVIC.

Low enrollment - first year down 20%, plans to offer equivalent of 2nd year MECH engineering at UVIC are on hold.

Hoping that 2nd year electrical engineering number's will go up. Goal of 12 students in 2nd year.

Recruiting from high schools, established an engineering fair, first one is next week.

See attached report

Kwantlen (Tom McMath & Carmen Ciubotariu)

70 students in two sections, demand is down, wait lists are smaller.

Student quality is off, having negative effect on classes.

Math is the more difficult course. Intro to Engineering class ~~was to be~~ modified to include some of the generic skills ~~(to~~ conduct presentations, ~~and~~ work in groups, ~~working well after 2 years.~~

Intro to microcomputers ~~ran~~ ~~uning~~ for the 2nd time, repackaging ~~lab manual~~ ~~course~~ w/ smaller tasks. ~~High s~~ Satisfaction levels very high on course evaluation.

Looking to hire an engineering instructor.

Switching main physics text from Knight to Giancolli (for engineers) to include more applications and traditional problem solving. Will look at graphics course over the summer and reestablish contacts with universities to inquire what they would like to see in the courses.

See attached reports

Capilano (Lisa Lajeunesse & Bernadette Currie)

2 engineering programs, 1st year mimicking UBC's first year. Engineering transition program caters to mature students and weaker high school students. Students do a semester of preparatory courses and then transfer into 2nd year at one of the universities.

Enrollments are down 20%. First year engineering intake was down as well. Transition student numbers was up a bit but concerned that won't be the case in the future but have advantage of flexibility for their students in course offerings.

Lost 2nd year COMP and PHYS and possibly 2nd year MATH which will affect the bridge programs.

17 students total from 2 programs have fulfilled the GPA requirements to transfer to UBC.

See attached report

Bernadette – AutoCAD and Modeling Course Instructor:

Not much increase in female student numbers. Bernadette has created a mentorship program called AWESOME (Advancement of Women in Engineering through Student Outreach and Multi-School Endeavours). Has received financial support from the JADE project Bridges

Program to fund the program. Will run for the next twelve months. It is to support and encourage networking amongst female engineering students in a variety of B.C. institutions by funding their participation and attendance as teams or groups at engineering-related events organized through academic institutions and in the engineering community at large.

Selkirk (Elroy Switlishoff)

2nd year enrollments down, 1st year enrollments remaining the same. Less mature students enrolling. For the third year running Selkirk implemented a successful high school outreach program where high school students are transported in to check out the college and get a general feeling of Selkirk and its programs.

12 first-year students – staying steady, female enrollment is dropping considerably.

Good participation in Intro to Engineering course – engineers and engineering employers help participate, good response, invite speakers in to talk about their career paths and is inspiring to hear from these people.

Co-op program, offering opportunities, good uptake, 7 placements – approximate 50% placement rate.

Aviation program has opened up a new wing at the local airport.

Selkirk became a degree granting program in Geomatics and GIS, first and only degree that we offer.

Selkirk announced a new renewable technologies program. Large pullout section in Vancouver Sun. Multinational program, 6 schools total: 2 in Canada, 2 in US, and 2 in Mexico. Opportunity for students to transfer between the institutions. Definitely has momentum.

See attached report

SFU (Paula Scott on behalf of Ash Parameswaran)

Enrollments is down across university, Fall 2007 forecast for Engineering looking steady. Two important changes: minimum of 24 credit hours of transferable courses is required for transfer (down from 30) & transfer students are required to have a 2.5 CGPA or higher on a 12 credit course load in the semester prior to entry (down from 2.7). Proposal to move ENSC 151 to 2nd year and ENSC 150 to 2nd semester of 1st year has passed ENSC UCC and will be sent through to SFU Senate. It is anticipated that the change will be implemented in the Fall 2008 semester.

Process to implement Biomedical Engineering Bridge Program between Camosun, BCIT, & SFU is nearing completion. Associate Dean (John Jones) is awaiting word from the SFU Math Department regarding the BCIT Math courses. Once John has completed the process with BCIT, he will be in contact with Camosun and other colleges. New Mechatronics Program offered at SFU Surrey beginning Fall 2007. SFU ENSC will provide the articulation committee with curriculum/transfer information.

UBC (Bruce Dunwoody)

Applications are up 8-9% this year. (Engineering Science and Business are the only two areas at UBC with an increase in numbers). Target number for UBC Vancouver this year is 620 domestic students. There is no target number for international applicants, which are estimated to be approximately 80 this year. For both Vancouver and Okanagan, 150 students transferred in at the second year. UBC Okanagan is offering the first year engineering for the third time this year. Target number for applicants this year was 120. They got 107. Next year the target number is 180. The third year of the UBC Okanagan Engineering program will begin for the first time January 2008. Bruce Dunwoody mentioned that UBC is looking to change their requirements for admissions regarding Grade 12 provincials. Students will still need to write the exam but a poor provincial will not cause UBC to revoke an offer of admission. A new engineering building for

UBC Okanagan will be breaking ground this summer. UBC Vancouver has a new Biomedical stream in their Mechanical Engineering program

See attached report

Trinity Western University (Arnold Sikkema)

TWU has all the technical courses required for engineering on stream and is encouraging students to take these courses and then transfer on to complete an engineering degree. Trinity will be looking into the possibility of an engineering degree in Biomed and/or Computer Software. These two disciplines are being targeted because they already have established degree programs in these disciplines. They are looking into bringing in guest lecturers and recruiters from industry and other universities to come and talk about engineering.

[See attached report](#)

UVIC (Poman So)

-Admission requirements for Grade 12 MATH, PHYS, and CHEM have been lowered from 77% to 75%. For college transfer the admission requirements have been lowered from 75% to 67%

-A new admission guarantee for college transfer students has been put into place. Previously, UVIC had limited seats for transfer students but now they guarantee a seat for any transfer student that meets the admission requirements.

- In reference to all the listed course changes in the UVIC report: the changes were put into place to make UVIC's engineering program similar to UBC's so that when students are looking to transfer from a college they will have the choice of both UVIC and UBC.

6. ROUND TABLE DISCUSSIONS

Discussion regarding Core Chemistry Courses

-Kwantlen brought forth the difficulty their students have had in transferring first year chemistry to the three university Engineering programs. Each university engineering program wants a different chemistry course or combination of chemistry courses from Kwantlen.

- SFU wants Kwantlen students to have completed Kwantlen's CHEM 1110
- UBC wants Kwantlen students to have completed Kwantlen's CHEM 1110 & 1210
- UVIC wants Kwantlen students to have completed Kwantlen's CHEM 1210

[\(These were best matches from our courses, not exact.\)](#)

To respond to this, a one semester engineering specific chemistry course was established at Kwantlen that was an amalgamation of the principles of Kwantlen's CHEM 1110 & 1210 [and matched UBC's Chem 154 quite closely \(Uvic has also accepted it, SFU has not yet responded\).](#) [Student found the course difficult, and success rates were less than hoped for.](#) The idea was that this course would be a one semester [duration and course that](#) would fulfill each of the 3 universities engineering 1st year chemistry requirements. [The difficulty here is that the course was both extremely difficult and under-enrolled.](#)

Kwantlen is asking the 3 universities (SFU, UBC, UVIC) for clarification on exactly what each engineering school wants in the form of first year chemistry so that they can look at developing or modifying a course that will truly meet the first year engineering chemistry requirements at all three of the universities. [The question is, which course topics are considered core to the different](#)

programs, and which are for general background and thus might be substituted by something else at the same level.

All three of the universities, SFU, UBC, and UVIC said they would look into the issue and that they would get back to Kwantlen with an answer to their question.

Transferring to UBC Okanagan

-UBC was asked about the differences between Okanagan and Vancouver campus for those transferring into 2nd year. There are no differences. All students applied to the faculty of engineering.

Getting Elementary Level Students Involved in Science

-General discussion was had pertaining to the need to get students interested in science at the elementary level.

-A problem that was highlighted was the fact that elementary schools in BC generally do not have educators with any background in science teaching science to elementary level students.

- Trinity Western mentioned an outreach program that they have that targets grade 4-7 students where they bring them in for a 3 hour exposure to the university and university level science classes, students, and professors.
- UBC will be hosting a workshop in the fall for grade 6 and 7 teachers to demonstrate (and hopefully provide lesson plans) for some science experiments.
- SFU mentioned that SFU Surrey will be hosting a regional Lego Mindstorm competition for students aged 9-14 on November 24th of this year.

APEG

-General discussion was had regarding getting APEG more involved in our processes.

-UCFV asked if we could get a rep from APEG out to the next meeting so that we can inform them of what is happening in our institutions and ask them to update the info pertaining to our schools on their web-site. A representative from APEG will be invited next year.

BROCHURE

A new brochure promoting engineering will be produced. This will be done by a sub-committee consisting of:

Tom McMath (Chair) – Kwantlen Univeristy College

Bernadette Currie – Capilano College

Bruce Dunwoody – UBC

Elroy Switliff – Selkirk College

Shelley Brunn – APEG Staff (she will be contacted to confirm her involvement with the committee)

The development of a professional and informative APEG brochure and web-site in relation to studies in engineering science is the central mandate of this committee.

7. INSTITUTIONAL REPORTS

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**University of Northern British Columbia Report: BC Engineering Articulation
Meeting
Friday May 11, 2007**

The Joint UBC/UNBC Environmental Engineering Program has been in operation since September 2002 and has just completed its fifth full academic year of operations. The first group of students completed year 4.5 of the program at UNBC last December 2006, and will graduate at the May 25th convocation.

We admitted 13 students in September 2002, 8 students in September 2003, 23 students in September 2004, 14 students in September 2005, and 20 students in September 2006. For September 2007 admission, as of early May we have had 59 applicants, have made 34 offers and had 23 acceptances, a number of offers are pending student response. Approximately 1/3 of the applicants to this program are transfer students with an even higher fraction of transfer students who are accepted and attend. We expect 25 new admissions in total for September 2007. The program is designed to accommodate a maximum of 40 students per year.

The program is under an informal CEAB accreditation process along with the other UBC programs, during the fall of 2005, even though based upon the graduation date of our first class (May 2007) we should have undergone an accreditation visit in the Fall of 2006. We were not required to have a visit in 2006, and instead submitted some revised documentation on the program in the winter of 2007. The accreditation team reports were very positive. We anticipate program accreditation being formally granted at the CEAB Accreditation meeting June 10-12, 2007.

In a time of zero budget increase at UNBC we were able to obtain new resources for the program last year, and hired a tenure-track Assistant Professor (Steve Helle), and a term Senior Lab Instructor (Wendong Tao). The funding for the term SLI was subsequently removed from the program in a university-wide effort to correct a "structural deficit" at UNBC, although we have retained funding for the position in 2007/08. We are currently considering curriculum revisions to teach more engineering content in the first two years of the program, and to make it more accessible for transfer into second year from other institutions.

Getting the word out to prospective students and creating a sustainable enrollment into the program continues to be a high priority. We expect that program accreditation, as well as an increasing public profile for environmental issues generally, will lead to future increased enrollments. Transfers into year 2 of the program are welcome and very feasible. Course articulations at Colleges and University Colleges in BC and Alberta have been assessed with a view to facilitating transfer into second year of the program. Based only on articulated courses, transfer from a first year science program is more direct than from engineering UT programs because many UT programs have versions of basic science courses tailored for engineering students. These courses typically do not articulate with UNBC basic science courses that are part of the Environmental Engineering program. However we have designed ways of facilitating entry directly

from UBC First year engineering as well as other engineering UT programs into this program that will allow students from these programs to enter a slightly modified second year to complete second year requirements in the normal time.

Peter L. Jackson, Associate Professor and Co-Director of Environmental Engineering
UNBC Environmental Science and Engineering Programs

Engineering at Trinity Western University

Report for the BC Articulation Committee Meeting
11 May 2007

by Dr. Arnold E. Sikkema
Associate Professor of Physics and
Engineering Transfer Program Coordinator
Trinity Western University

We have renamed our “pre-engineering program” to an “engineering transfer program”, and are offering interested students two options:

- One year at TWU: Complete UBC’s standard engineering transfer program complete with Calculus I & II, Physics I & II, Chemistry I & II, English, Linear Algebra, Mechanics, Computer Programming, plus an engineering graphics course possibly taken at Kwantlen College’s Richmond campus in May & June. For our students needing this Kwantlen course, procedures need to be set in place yet. This will require some revision of our current Mechanics course which has multivariable calculus as a pre-requisite and serves our physics and chemistry programs, and will be feasible only for the most capable student or those who have already taken some calculus.
- Two years at TWU: Allow students to take Mechanics in their second year, and supplement this with additional basic science and mathematics courses such as multivariable calculus, differential equations, statistics, as well as engineering science courses such as electromagnetism, as well as complementary studies courses in the humanities and social sciences. This latter option allows students to participate in the unique Christian liberal arts academic experience of Trinity Western as well as obtain additional technical courses which will reduce their load for their remaining three years. The acceptability of the complementary studies courses into UBC’s programs, as well as the full transferability of the additional technical courses, needs further discussion with UBC.

In addition, we are in the early stages of considering the full development of four-year engineering programs in one or two high-demand and/or niche areas of engineering, such as mechanical, civil/environmental, software, and biomedical engineering.

We plan to begin a series of guest lectures in engineering well as improve our publicity information regarding the above options.

University of Victoria
Engineering Articulation Meeting
11 May 2007

Fayez Gebali, P.Eng.

Admitted 167 students for Sep. 2006 in BEng/BSENG program. We admitted 49 college transfer students to second year in BEng/BSENG programs.

We are targeting 220 first year students this year. We are also targeting 50 college transfer students.

Our first year admission cutoffs were 75 % in Math, Physics and Chemistry and overall average required was 77%. For admitted college transfer students, our cutoffs for assigning students to programs of their choice were UVic GPA of 4.0 out of 9.0 for transfer into BSENG, Elec. & Comp. Eng. and 4.5 for MECH.

Cutoffs this year will be initially the same as last year. However, for college transfer student admission, we have a new cutoff of 67% (down from 75% last year).

We are expanding college transfer and modifying the admission criteria as follows:

1. Achieve an average grade of 67% or more.
2. Any eligible college transfer student is guaranteed admission to one of our BEng/BSENG programs. Last year we set this limit at 75 students.
3. College transfer students are also given the option of applying to the Department of Computer Science if they wish.

Some changes were implemented for our first year curriculum as follows.

1. We now accept one chemistry course as being equivalent to our CHEM 150. Any course equivalent to UVic's CHEM 102 is acceptable replacement to our CHEM 150
2. We have replaced CSC 110 with the new CSC 111 that uses C and is similar to UBC's.
3. We have replaced CSC 160 with CSC 115 which has many transfer equivalents in colleges.
4. PHYS 122 is now equivalent to just PHYS 120. Before it used to be equivalent to PHYS 120 or PHYS 112 with a grade of C or better
5. PHYS 122 and PHYS 125 are now equivalent to PHYS 112. Before it used to be equivalent to PHYS 112 with a grade of B or better.

File Note Memo

To: Dr. Normand Fortier, P.Eng.

From: Elroy Switlishoff, P.Eng., Engineering Instructor, Selkirk College

Date: 7 May 2007

Subject: Annual Report and Issues List from Selkirk College for Engineering Articulation Meeting

1. Annual Summary

Selkirk College's 2006-2007 enrollment in the first year engineering/applied science bridge program was similar to both the previous year and the historical average at 10 to 12 students. As in previous years, it was difficult to quantify the exact number because some students were taking a second year of a bridge program at Selkirk and taking first-year courses in second year.

Selkirk has an "Experience Selkirk" day that gives graduating local high-school students a one-day "look and feel" of the programs offered here at Selkirk. This has proven to be a reliable indicator of the following year's enrollment. Our Engineering workshop had 11 students enrolled, again very similar to the long-term average.

Of this year's first-year class, at least 3 are intending to transfer to UBC, others are stating a preference to complete a second year of studies at Selkirk College (maths, sciences, some electives).

Reintroduced "second-year" courses (eg. Electromag – Fields and Waves) are having enough enrollment to justify running again. Second year enrollment seems to be holding its own and has us examining whether to offer more second year courses.

Good participation and visibility with the West Kootenay Branch of the APEGBC. Some students have been participating in Branch field trips.

Second year for a formal Co-op course in Engineering in the break between first-year and second-year. We are placing about half the students in engineering-related work opportunities. Another 25% declined job offers because of distance or other logistical issues.

2. Issues

- Students have been asking about transfers to UBCO; how are transfers working, what is the best process to follow?
- Identify any new courses required for transfer in second year programs; are any fundamental requirements changing?
- Identify discipline popularity for second year.

Engineering Articulation Report for UCFV - 2007

The UCFV program has had few changes this year, but may see expansion in the near future because of changes in the way the administration is supporting the program.

The News

UCFV has a new academic vice president who is enthusiastically supporting an increase in trades, sciences, and engineering. Her hope is that within a year UCFV will have investigated the options of partnerships, bridging programs, or other initiatives to encourage more students from the Valley to enter the profession.

Related aside: UCFV is currently conducting a search for a new Dean of Science in a re-shuffled faculty. The new person is expected to support these initiatives. Please note, if you or anyone else is a potential good candidate, throw your hat into the ring.

The UCFV ETP has always suffered from a 24 student bottle-neck. We are experimenting with different ways of offering the drafting course to allow 36 students into the program. If successful again, I hope to increase the size of the program next year.

I am also lobbying the Acting Dean to allow wait-listed students the opportunity to register for all the required courses; I hope this will remove an artificial barrier which is inconveniencing a few students every year.

Efforts are underway to improve our links with the local high schools. For the first time in years I have been invited into the schools.

Our current ETP is designed to transfer students to UBC. UCFV is hoping to formalize an agreement with UVic, and I have been asked to investigate the possibility of additional links with other institutions. On a related note, more students are expressing an interest in delaying their transfer for a year, and I hope to find additional courses that will be acceptable to UBC or UVic.

Course Specifics

Our Engr 151 Drafting continues to use Intellicad software and Earle as a suggested text. We are experimenting with moving from a fully integrated lecture/lab to stand alone labs. I was not thrilled with our first attempt, and we are revising the offering this year.

Our Engr 113 Statics and Dynamics continues to use Hibbeler.

Program Specifics

Last year we admitted 24 officially and we lost 2 of them during the year. I do not know the exact number that completed all courses, but it looks like we will double the number completing the full number to about 16 from 8. The difference is because we were allowed to reduce a two computing course requirement down to one (thank you to UBC).

Of the 17 that declared their intentions for next year, 10 plan to go to UBC, 2 plan to go to UVic, and 5 intend to stay at UCFV either for a just second year or for a B.Sc.

This year we have had about 50 applicants.

Douglas College Report to Engineering Articulation Meeting - May 2007

Enrollment in APSC 1110 (Engineering Graphics with Auto CAD Lt) this fall was only 9, with 7 completing the course successfully. Previous year's enrolment was 18. The CAD part of the course is continuing to be popular among the students.

The Building Environmental Systems (BES) Training Program at Douglas College will in near future include an Introductory CAD course which will be offered by the Physics Department in parallel with our APSC 1110 course in the Fall/Winter semester.

Enrollment in Physics 1170 (Engineering Mechanics) this winter was similar to last year's (13 students) and 11 students; completed the course successfully.

As with previous years the Physics Department followed the tradition of inviting guest speakers from industry and this year our speakers were from Westport Innovations facility in Vancouver, who presented the company's Low Emission Liquefied Natural Gas System for Trucks. This presentation was well received by our engineering students.

Kuros Gadareh *CEng MIMechE*
Chair, Physics Department
Douglas College



School of Engineering Science

**2007 Articulation Report
School of Engineering Science
Simon Fraser University**

The Engineering Science Program at SFU is a small and specialized program with 599 undergraduate students and 170 graduate and PhD students. Each year we admit, on average, 30-40 college transfer students into our program. There is no limit on this number; as many apply that are qualified will be offered admission.

Admission requirements – College/University Transfer

Students wishing to transfer into our program from a college or university must first be admitted to the university (**a minimum of 24 credit hours of transferable courses is required**) at which point SFU Engineering Science will review each applicant on an individual basis for admission to our program. The student must obtain a **2.5 CGPA** or higher on a **12 credit course load in the semester prior to entry in our program**. Applicants with less than 12 credits are reviewed by the Admissions Chair, Dr. Ash Parameswaran, on a case by case basis. 150-200 students (BC12 & College/University transfer) are admitted to SFU Engineering Science each fall.

Burnaby Program

In last year's report we indicated that although we would like to welcome more transfer students into SFU Engineering Science, it remains a challenge for students to make a smooth transition into our program. Courses ENSC 150 (Introduction to Computer Design) and ENSC 151 (Digital and Computer Design Laboratory), which are both offered in first year, are definite bottleneck courses as there are currently no equivalent course offerings at the college level. Given the rigidity of our program, it is difficult for students to 'catch up' with their respective cohorts when behind two key courses that are also prerequisites for 200 level courses.

Update on ENSC 150 & 151

The Undergraduate Curriculum Committee (UCC) of SFU Engineering Science has undergone the process of re-examining the positioning of ENSC 150 & 151 in the first year. We are pleased to report that a proposal to move ENSC 151 to 2nd year and ENSC 150 to the Spring of 1st semester will be sent to SFU Senate, and it is anticipated that by 2008 the proposal will reach the approval stage and changes will be implemented. This will greatly affect the ability of transfer students to transfer smoothly from college or other university programs to our Engineering Science program. Virtually every transfer student would enter into 2nd year; we would recommend that transfer students apply for admission to our program in a Summer semester. In addition to continuing with the re-positioning of the aforementioned courses, the UCC is continuing to progress through a complete curriculum re-examination for the entire undergraduate program. We have also made and continue to make a concerted effort to provide double course offerings for current and transfer students to allow for flexibility in course scheduling.

Bridge Program

Dr. John Jones, Associate Dean of Applied Sciences and Engineering Science Professor, has been continuing with the development of a Bridge Program to our Biomedical Engineering option at SFU. This program will consist of a 2 year diploma through BCIT in the Biomedical Engineering and Technology Program and 1 year at Camosun which will offer students direct entry into the third year of our Biomedical Engineering Program. The process is almost complete; Dr. Jones is awaiting word from the SFU Math Department regarding the BCIT Math courses. Once Dr. Jones has completed the process with BCIT, he will be in contact with Camosun and other colleges.

Mechatronic Systems Engineering (MSE) – SFU Surrey, Fall 2007

Engineering Science at SFU is pleased to be offering Mechatronic Systems Engineering exclusively at the SFU Surrey Campus beginning Fall 2007. We are in the process of admitting BC12, college & internal transfers into the program. The admission criteria for MSE transfer students are equivalent to that of the Burnaby campus (see above). We will work with the colleges closely to communicate the specifics of college transferability as we continue to develop the new program.

We are fortunate to have Dr. Farid Golnaraghi develop the 4 year curriculum which includes specialized Mechatronics courses coupled with the core engineering and science offerings as well as a unique entrepreneurship/business component. MSE will also have an integrated co-op component (min. 3, four month work terms).

Our Program

As of May 2007, our six program options are as follows:

- Systems Engineering
- Computer Engineering
- Electronics Engineering
- Mechatronic Systems Engineering (offered exclusively at SFU Surrey)
- Biomedical Engineering
- Engineering Physics

The first four options are Majors programs; minimum CGPA of 2.4 and completion of a Capstone Project, Honors minimum 3.0 CGPA and completion of an Undergraduate Thesis. Biomedical Engineering and Engineering Physics are Honors only options.

The Engineering Science Program underwent a formal CEAB accreditation review in Fall 2006. We will receive the full report from the review committee in June/July 2007.

The Future

For the past five years, Engineering Science has actively recruited from high schools and colleges in the Lower Mainland and around BC. Although much of our activities focus on high school outreach, we would like to further develop our relationships with BC Colleges. We invite you to contact us if you are interested in having a representative from SFU Engineering Science visit your institution this coming Fall 2007.

Engineering Science Contacts:

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TRU Engineering Transfer Program Report May 4, 2007

Engineering Articulation

May 11, 2007 – SFU

2006/2007 Engineering Program Summary

The TRU first year engineering program has capacity for 40 students. In fall 2006, 37 students entered the program. Six of these had previously completed a full year of science studies or portions of the first year engineering program.

At the end of our winter 2007, approximately 26 of our students should be in a position to move into second year elsewhere. The majority of these are intending to transfer to UBC. However this year has seen a renewed interest in transfer to UVic and at least 5 students will have applied to do so.

Our 2nd year Electrical-Computer Engineering transfer program offered in partnership with UBC unfortunately did not run this year.

2007/2008 Engineering Program Projections

Applications for the first year engineering program are up slightly over last year. As of this writing, 44 students had been admitted to first year with an additional 15 incomplete applications on hold. We expect these figures to change as some students decline our invitation, and applications from international students are received later in the spring and early summer.

New for 2006-07

TRU jointly hosted an Engineering Career Night with UVic at our Kamloops campus this past October. The focus was to promote careers in engineering to local high school students and their parents. TRU has held events of this nature in the past and will continue to do so.

Our 4th annual Popsicle Stick Bridge contest was held on March 10, 2007 in partnership with the south central branch of APEGBC. New records were set with the top bridge failing at 1173 lbs of load.

After this year, our Faculty of Science will not longer be able to provide a chemistry course specific to first year engineering. Our chemistry department has restructured their first year courses and beginning in 2008-09, the TRU engineering syllabus will replace ECHE 115 with a general science course CHEM 152. CHEM 152 has been reviewed and accepted for first year engineering transfer by both UBC, and UVic.

B. (Ben) C. Giudici

TRU Engineering Transfer Program Coordinator

Capilano College Report: BC Engineering Articulation Meeting

Friday, May 11th, 2007

Capilano College has two engineering transfer programs, both of which transfer to 2nd year engineering at UBC and fulfill most or all of the prerequisites for 2nd year engineering at other BC universities.

Modifications have been implemented in our Computing course for Engineering (Comp 120) to address the changes in UBC's APSC 160. This updated version was offered this past fall for the first time. We are in the process of seeking direct transfer for this course.

This spring, Bernadette Currie joined our engineering department to teach our Engineering Design course. This year, the students learned 3D parametric modeling (Solid Edge and Solid Works) as well as AUTOCAD.

Bernadette has received financial support from the JADE project Bridges Program to fund the AWESOME Initiative, which stands for Advancement of Women in Engineering through Student Outreach and Multi-School Endeavours. This initiative will run for the next twelve months. It is to support and encourage networking amongst female engineering students in a variety of B.C. institutions by funding their participation and attendance as teams or groups at engineering-related events organized through academic institutions and in the engineering community at large.

The Pure and Applied Sciences Division continues to struggle with declining enrollments. Though our numbers in Engineering were slightly down this past year, it has not affected our course offerings. Our applications for next year are currently down about 20%.

Current Applicants

To date, we have received 182 applications for our engineering transfer programs for the fall semester. We will be looking to accept approximately 70 students into the two programs.

First-Year Engineering Transfer Program

This program is modeled after first year engineering at UBC. This fall 28 students enrolled in the program. Of these students I would estimate that 11 have successfully met UBC's transfer criteria. This is despite more strict entrance requirements that were imposed last year (minimum B grade in each of Math 12, Chem 12 and Phys 12). Students seem to be struggling with the second semester of the program, in particular, Calculus 2 and Linear Algebra.

Engineering Transition Program

This is a two-year program for students who do not have the prerequisites to begin first-year engineering and for high school students with a weaker background. The cohort that are finishing this year began in the Fall of 2005. There were 28 students initially accepted and about 20 students returned for the second year of the program. Of these 20 students it is estimated that 6 of them have met UBC's transfer criteria.

In Fall of 2006, a fresh intake of 21 students registered in their first-year of the transition program. Of these students it is estimated that 13 students will return for their second year.

Lisa Lajeunesse

Convenor of Engineering
Capilano College

Engineering Articulation Report 2007
Langara College

The demand for engineering continues to be stable. We had a full section of 35 students and a waitlist of more than a dozen for the Engineering Mechanics (PHYS 170 equivalent) in Spring 2007. As usual, we are running all the courses required for first-year engineering this summer as full-semester courses (May--Aug). The Summer section of Engineering Mechanics is 85% full at 27, and the Engineering Graphics is full, with 32 students.

For the Fall 2007 intake we have lowered our entry requirements to the following: Gr 12 English (A), Math (B), Phys (B), Chem (B). We hope that this change will shift the majority of students desiring engineering into the Engineering Transfer program (as opposed to completing the courses as Arts & Science students).

In the Spring we had a successful and well-attended series of presentations by university faculty from various branches of engineering.

Respectfully submitted,
Robin Macqueen

May 9, 2007

**Malaspina University-College
2007 Engineering Articulation Report**

Articulation meeting, SFU, May 11, 2007

1. In the Fall 2006 Malaspina had approximately 25 students entering the 1st year Engineering transfer program, 16 of which were in the UVic stream. This number is down approximately 20% from the year before. It is estimated that twelve of these students will have high enough GPA to transfer into 2nd year Engineering, with approximately 4 staying at Malaspina, 3 transferring to UVic, and 5 to UBC and other institutions.
2. Following last year's agreement between Malaspina and the University of Victoria to offer the equivalent of UVic's 2nd year Electrical and Computer Engineering program, a fairly extensive promotional campaign has been undertaken with brochures/posters/newspaper articles as well as visits of our faculty to high schools. Furthermore, to promote Engineering to the local community we have established the "Engineering Fair" as an annual event, with the first one being held on May 17.
3. Unfortunately our 2nd year Electrical/Computer engineering transfer program to the University of Victoria has gotten off to a shaky start. Out of the 3 accepted applicants only 1 decided to attend Malaspina in the Fall of 2006 with the other 2 transferring directly to UVic. Worse yet, due to the low enrollment numbers in combination with the withdrawal of Provincial funds due to Malaspina's overall sub par enrollment, the 2nd year Mechanical Engineering program has been indefinitely postponed.

Paris Polydorou
University-College Professor
Dept. of Physics, Engineering and Astronomy

Kwantlen University College Engineering Articulation Report 07

Our program started full, with 70 students in the two sections. Student quality was off a bit; our usual small contingent of top-end students was conspicuously absent. We also had a problem with an unwillingness to actually do any work; we don't know if this is a difficulty in adjusting from high school to a more university-like teaching style or some other factor, or just a particular class. The survivors should be strong enough academically. As usual, Math was the killer class.

In our Intro to Engineering class this year we were able to schedule a pretty full fall semester, and thus a relatively light spring semester. The Richmond class entered the local Construction competition, while the Surrey class did a more local project, but some students didn't really buy into it; enthusiasm for anything that didn't involve marks was quite low. The Intro to Microcomputers course ran for the second time with a revised lab manual, and more revisions are planned for next year, mainly to get more regular feedback to the students. Satisfaction level among students was quite high at the end, once they got the robots to work.

Our Physics courses will start using the Mastering Physics on-line problem system, largely as a means of prodding students into doing more homework. There will be some marks given for this homework, around 10%. The main Physics text is being changed from Knight (heavily concept oriented) to Giancolli (for Scientists and Engineers, the calculus based one) which has more applications.

We intend to look at the curriculum of our Eng Graphics course over the summer with a view to updating the technology.

Okanagan College – Engineering Articulation Report (May 11, 2007)

Commitment to University Transfer for Engineering or any UT transfer at the former Okanagan University College (OUC) weakened when we became degree granting. As such, we do not have a UT Engineering transfer program at Okanagan College (OC) any longer. We do have a few students (between 3 and 5 students in total) in a modified first-year Science program that plan to transfer into Engineering after one year.

Last year I indicated that Okanagan College was looking at designing a six-month bridging program from our Engineering Technology programs into university Engineering programs, specifically UBC-Okanagan Engineering. This has run into a number of snags and developing much slower than I had hoped, if at all. Therefore, I hope to re-introduce the Statics and Dynamics course and push for a regular full UT Engineering program over the next couple of years. This would also require the re-introduction of the Engineering Graphics course as well.

We currently have six diploma programs related to Technology:

- 1) Civil Engineering Technology – Full but with declining waitlists each of the last two years.
- 2) Electronic Engineering Technology – Not full but with more students last year than the previous year and applications are up again this year.
- 3) Mechanical Engineering Technology – Not full but with more students last year than the previous year, however applications for this year are down a bit.
- 4) Water Quality and Environmental Engineering Technology – Not full but with more students last year than the previous year, however applications for this year are down a bit.
- 5) Network and Telecommunications Engineering Technology - Not full but with more students last year than the previous year and applications are up again this year.
- 6) Computer Information Systems - Not full but with more students last year than the previous year and applications are up again this year.

and one degree program:

- 1) Bachelor of Computer Information Systems – Not full but holding steady each of the past two years.

Finally, I would like to report we had a very successful series of outreach events again at Okanagan College this year related to Engineering. These included our SKILLS sessions where high school students attend a full day of labs in Science and Engineering and our annual Spaghetti Bridge Contest that attracts students from as far away as Europe and the Middle East.

Yours sincerely,
 Richard Christie
 Chair- Physics and Astronomy
 Okanagan College.

Institutional Report 2007

University of British Columbia

There have been few changes in the engineering program at UBC over the last year. The target for first-year enrolment this year is 620 (domestic) in Vancouver and 180 in Kelowna (although we do not expect to reach the latter target). The high School admission average is 82% to Vancouver and 75% to Kelowna. We will continue to accept engineering transfer students into second year at a GPA of 2.5/4.0 although the GPA requirement for students not in the engineering transfer program has risen to 2.8/4.0 for this year. The same second-year transfer requirements apply to both campuses.

We are starting to accept Camosun bridge students in mechanical engineering to the mechanical engineering program in Vancouver (we did accept a few previously on a pilot basis) and will be accepting some bridging students into the third year program at the Okanagan campus.

The Okanagan campus will be offering the third year engineering program for the first time starting in January 2008. The third year program will not start until January as the students will be on co-op work terms until then. The co-op program is (more-or-less) compulsory for the first class at UBCO because of the number of students involved, but will be optional after that.

Biomedical engineering options have been added to the Electrical Engineering and to the Mechanical Engineering programs in Vancouver.

**May 2007
Articulation Report
Camosun College**

At this time, Camosun College offers three (3) technology-access programs, four (4) technology programs, and six (6) engineering-bridge programs. There are also a number of technician programs.

Technology Access Programs

The technology access programs assist students in meeting the admission requirements for the technology programs. Camosun presently offers access programs to Civil, Electronics and Mechanical Engineering Technologies.

Table 1. May Enrolment in Technology Access Programs

Discipline	2007	2006	2005
Civil	22	20	26
Electronics	6	11	23
Mechanical	16	13	26

The technology access programs are normally taken by mature students returning for retraining or recent high-school graduates who do not meet the admission requirements.

There has been a steady rise in interest for the Civil Access programs, a steady decrease in interest in Electronics Access, and relatively-stable interest in Mechanical Access over the last two years.

Technology Programs

Camosun offers civil, computer systems, electronics and mechanical engineering technologies. The electronics engineering also has a computer engineering option. All technologies offer co-op as an option.

Table 2. May Enrolment in First-Year Technology Programs

Discipline	2007	2006	2005
Civil	84	52	53
Computer Systems	68	59	53
Electronics	28	28	51
Mechanical	59	63	79

This year, Civil Engineering Technology is experiencing a large demand for seats. In response, the number of first year seats will probably be increased from 48 to 60.

The Computer Systems Technology has experienced a slow but steady growth. Recently, enrolment into the Electronics and Mechanical Engineering Technologies has remained relatively stable. Unfortunately, the Electronics and Computer Engineering Technologies have been heavily undersubscribed for the last couple of years.

Engineering Bridge Programs

The Engineering Bridge Programs offered by Camosun College are: Civil, Software, Mining, Electrical, Computer, and Mechanical. Not all of the Engineering Bridge Programs are currently available and a new one is in the proposal stage.

The Civil Engineering Bridge currently feeds into the 3rd year of UBC Vancouver and next year they will also feed into UBC Okanagan as well. There were 25 students accepted into this program in January 2007, of which 24 were successful. All the students are destined for UBC Vancouver.

The Software Engineering Bridge was suspended until revisions could be made to ensure that the bridging students were more successful after bridging. The latest revision of the Software Engineering Bridge program allows students to enter the 2nd term of the 2nd year at the University of Victoria (UVic). We are hoping to have this revised program in place by June 2008.

The Mining Engineering Bridge to UBC Vancouver was suspended due to lack of enrolment.

The Electrical Engineering Bridge and Computer Engineering Bridge feed into the 3rd year of UVic.

The Mechanical Engineering Bridge now bridges into the 3rd year of UVic, UBC Vancouver and UBC Okanagan. UVic is a co-op mandatory program while co-op is optional at the other two institutions.

Table 3. Interest in Engineering Bridge Programs

Discipline	2007	2006	2005
Civil	28	18	N/A
Mining	0	1	N/A
Computer	7	6	8
Electrical	30	34	30
Mechanical	63	31	27
Software	3	4	7

In summary:

- The interest in Civil Engineering has increased significantly.
- There is little or no interest in Mining Engineering.
- Interest in Computer Engineering is low while the University demand for students entering 3rd year is high.
- Interest in Electrical Engineering is steady but low and again the University demand for students is high.
- Interest in Mechanical Engineering is high. Fifty students made the engineering bridge requirements and fifty university seats are available to them. The applicants are from the following institutions:
 - Camosun 19
 - BCIT 11
 - Georgian College 7

- SAIT 6
- NAIT 5
- Conestoga College 2
- The Software Engineering bridge will be offered next year. Since the majority of the bridge courses match courses already offered by Camosun, we hope to be able to offer the program even if the interest is relatively low.

We are also considering a new engineering bridge program, ECE (Electrical and Computer Engineering) for Mechanical Engineering Students. This would allow Mechanical Engineering Technology graduates to bridge into Electrical Engineering at UVic.

Conclusion

Although I have been acting in the position of Coordinator - Engineering Bridge Programs for only about six weeks, I have been an instructor in the Mechanical Engineering Technology program at Camosun College for about 17 years. During that time, I have watched our program numbers grow and yet we can still provide the students with a high-quality education.

We are now concerned about the overall decreased enrolments in the technologies. We are now trying to foster partnership programs with the high schools to encourage the best students to pursue the technologies rather than follow the easy path into the trades. Otherwise, there will be a shortage of technologists and engineers in the very near future.

R.Derek C. Wakefield, P.Eng.

Coordinator, Engineering Bridge Programs
Co-op Field Instructor, Mechanical Engineering Technology
Instructor, Mechanical Engineering Technology
Camosun College