

Engineering Articulation Minutes

Attendees

Institution	Name	E-mail
BCIT	Renata Wood	rwood76@bcit.ca
Camosun College	George Ballinger, Tim Ayers	Ballinger@camosun.bc.ca ayers@camosun.bc.ca
Capilano University	Tony Cusanelli Christopher Morgan	tcusanel@capilanou.ca cmorgan@capilanou.ca
College of New Caledonia	Barbara Rudecki	rudecki@cnc.bc.ca
College of the Rockies	Trevor Beugeling	TBeugeling@cotr.bc.ca
Columbia College	Tara Todoruk	ttodoruk@columbiacollege.ca
Douglas College	Jennifer Kirkey, Allan Majdanac, Nakul Verma	majdanaca@douglascollege.ca kirkeyj@douglascollege.ca verman@douglascollege.ca
Kwantlen Polytechnic	Michael Poon	michael.poon@kpu.ca
Langara College	Csilla Tamas Sirine Maalej	ctamas@langara.ca
Northern Lights College	Lisa Verbisky	lverbisky@nlc.bc.ca
North Island College	Dennis Lightfoot	Dennis.Lightfoot@nic.bc.ca
NorthWest Community College	Regan Sibbald	RSibbald@nwcc.bc.ca
Okanagan College	Ryan Ransom Robert Stutz	RRansom@okanagan.bc.ca
SFU	Atousa Hajshirmohammadi	atousah@sfu.ca
Selkirk College	Elroy Switlishoff	elroys@telus.net
Thompson Rivers University	Faheem Ahmed	Fahmed@tru.ca
Trinity Western University	Arnold Sikkema	Arnold.Sikkema@twu.ca
UBC - Vancouver	Carol Jaeger, Peter Ostafichuk	carolj@apsc.ubc.ca ostafich@mech.ubc.ca
University of Victoria	LeAnne Jackson	engradu@uvic.ca
University of the Fraser Valley	Peter Mulhern	Peter.Mulhern@ufv.ca
University of Northern BC	Todd Whitcombe	Todd.Whitcombe@unbc.ca
Vancouver Community College	Costa Karavas	ckaravas@vcc.ca
Vancouver Island University	Brian Dick (Chair)	brian.dick@viu.ca

Regrets

Institution	Name	E-mail
UBC-Okanagan	Yang Cao	yang.cao@ubc.ca

Guests

Institution	Name	E-mail
BCCAT	Anna Tikina	atikina@bccat.ca
EGBC	Caroline Westra	cwestra@egbc.ca
University of Alberta	Torrey Dance	torrey@ualberta.ca
Queens/ONCAT	Brian Frank	brian.frank@queensu.ca
AVED	Shelley Gilmour	Shelley.Gilmour@gov.bc.ca

Recorder

Institution	Name	E-mail
Douglas College	Will Gunton	guntonw@douglascollege.ca

0. Meeting called to order at 10:00am

1. Welcome and introductions

Brian Dick welcomed everyone and called the meeting to order. Dave Seaweed delivered a territorial acknowledgment and gave a brief history of the meeting location (the Aboriginal Gathering Place).

2. Welcome from Douglas College

Brian Chapell (Dean of Science and Technology at Douglas college) and Jennifer Kirkey (chair of the Physics and Astronomy department at Douglas College) welcomed the articulation members. Douglas College is happy to be hosting and is excited to share the new Engineering Program at Douglas College.

A round table of introductions followed. All present introduced themselves and provided some brief information about the institutions they represent. Several guests of the articulation meeting were introduced: Brian Frank (Queens University and ONCAT), Caroline Westra (EGBC), Shelley Gilmour (AVED), Torrey Dance (University of Alberta), Anna Tikina (BCCAT)

3. Approval of Agenda / Minutes

No additions to the agenda were proposed. Nakul Verma motioned to approve the agenda, seconded by Peter Mulhern. Motion carried, agenda approved.

The minutes from 2017 were provided in hard copy. There were no discussions or changes to the minutes. Tara Todoruk motioned to approve the minutes, seconded by Todd Whitcombe. Motion carried, minutes were approved.

4. Greeting and Updates

The guests of the meeting provided a brief update to the articulation members.

Torrey Dance (University of Alberta)

Is attending the meeting to start and continue conversations about cross province transfers. Faculty of Engineering has healthy numbers.

Anna Tikina (BCCAT)

Provided a summary of the spring update (provided in the meeting package) and gave a summary of what BC Campus does. Specific updates were provided on: continued work on the education planner for BC institutions, updated K-12 graduation requirements, and reports on indigenizing education pathways.

The report on indigenizing education pathways was funded by contemporary issues funding. There will be an upcoming call for proposals in the summer, which is open to BC faculty, staff and students for projects that fall under the funding mandate.

The Joint Articulation Meeting (JAM) is coming in November. Congratulations to Briand Dick for winning the community leadership award. There is a call for nominations for these awards this year.

Discussion

- Hyperlinks in summary document provided to attendees are not working.
Action: Anna/BCCAT - PDF reports provided to Articulation Chair for posting to the meeting Dropbox.
- Questions about timelines for the K-12 curriculum updates. Numeracy assessment is in place for the upcoming academic year. Literature assessment delayed until 2020. A representative from the Ministry of Education will be attending the Physics Articulation meeting. Questions regarding the curriculum updates can be asked at that meeting. Brief discussion in the value of inviting a representative from the MoE to the Engineering articulation. No conclusion reached.
- There is a lot of good research on the BCCAT site, but it is hard to find the information unless you know that it is there. Request for a push to publicize the information. As a reminder to all, there is a BCCAT listserv which sends out a newsletter announcing new information and reports.
- Comment that often students select institutions for certain courses. Does the BCCAT website track where students are coming from? Response: Yes, there is some tracking data.
- Comment related to the education planner: Students may not be aware that direct transfer pathways are available. Can this be made more obvious for students? Response: Not yet, the planning side is coming later. However, it should be noted that many transfer agreements do not make it into the transfer guide. Institutions should ensure that active transfer agreements make it into the block transfer guide.
- Institutions are listed by alphabetical order. Can this be made random? Response: No, BC Transfer is a separate group from BCCAT.

Brian Frank (Queens University and ONCAT)

Ontario is looking at BC for high quality transfer agreements and is starting to build connections between technology programs and educational degrees. Some currently funded projects are looking at comparing outcomes between programs, looking at courses at the 1st, 2nd, and 3rd year levels. There is some opportunity for pathways. Work on building a web application to compare connections between programs is ongoing. Currently working with regulators and the accreditation board to develop proposals for students moving between programs.

A general discussion followed about the challenges related to universities accepting the risk of working with multiple colleges. It is important to find a way to involve regulators to reduce risk and be more efficient. Several universities have agreed to do direct transfers for first year math and physics courses, and the province now has an online version of some first-year courses.

Jennifer Kirkey (BC Campus Open Textbooks)

Provided an overview of open textbooks and is happy to see that engineering (and physics) courses have begun to adopt them. There is work beginning to compile resources for an engineering in society book. If you are interested in this, please contact Jennifer Kirkey.

Brief discussion followed about the creation of an open source Engineering Mechanics book. There was an application for funding for this project but was turned down. It is a very challenging task to replicate Hibbler (the standard textbook used for these courses).

Caroline Westra (EGBC)

Provided an overview of requirements for accreditation and is available for more information on how to register as an engineer. There is also a limited license aimed at university instructors, which is useful for the design courses being introduced into the first-year curriculum.

Discussion

- Question about those with backgrounds in experimental physics getting limited license. Response: Possible, but not many applications. There are over 200 limited licenses in BC, but only about 30 are university professors.
- Comment about overall registration as an engineer dropping. Response: No, the EGBC receives over 4000 applications a year. Have not seen a decrease in the percentage of applications. Overall membership is going up.
- Are there resources from the EGBC for helping new engineers in training (i.e., graduates) get placements in the workplace? Response: The focus of the EGBC is on meeting requirements to become a registered engineer, not focused on placement or getting people into jobs.
- Question about the split between international and Canadian applicants? Response: it is about a 50/50 split, which is steady year to year.

Shelly Gilmour (AVED)

Gave a summary of the ministries mandate letter and an overview of the additional funding and expansion plan for technology programs. There is 42 million in new funding to expand technology related programs in BC, in response to labor market demand for high skill workers and advocacy by post-secondary institutions. There were no questions about the mandate letter.

Truth and reconciliation is a large part of the ministries mandates, and many projects are looked at through this lens. It is a priority for government on all levels.

Action: Shelley/AVED - Complete funding package to be sent to the articulation chair when available for release.

Discussion

- Is there any sense of the timeline for approval of new proposals? A comment was made that new programs can sit for years without review. It would be helpful to have a “worse case” time for approval or denial. Response: The approval process is always ongoing and accepting new submissions, but not timeline could be given. Further discussion on timelines followed.
- For schools that do not currently have engineering courses, this may be an opportunity for a collective ask for funding for curriculum development.
- Discussion occurred about the provincial government subsidizing co-op positions and funding summer placements for students to help employ students engaging in research during the summer.
- A hurdle of sending schools is that there are not enough seats in 2nd year, so it is hard to have ensured pathways. Is there any movement to expand seats available in 2nd year? Response: this was a consideration for the technology expansions. A discussion about expansion of new programs vs expansion of existing programs followed. There are logistical considerations to be taken into account regarding making space for additional students in 2nd year.

6. Primarily Sending Institution Updates

The chair requested that if institutions find something that works well with students to please share (and highlight) in reports.

Full details for each institution can be found in the submitted reports attached to these minutes.

Camosun

- Continue to send students to UVic and UBC.
- Have incorporated internships that can be transferred as work terms
- Approximately half of students complete the programs in 10 months. Several will come back the next year and complete program in two years.

Capilano

Action: Capilano - Corrected PDF version of report to be sent to Chair

- Applications are strong (same as previous year)
- Have created a dedicated maker space for first year design students. About 5000 square feet with 3D printer and laser cutter. Have money to hire a dedicated lab supervisor and technician.
- First year program started with 33 students, but only 10 finished.
- New MOU signed with UVic

College of New Caledonia

- Have new funding for civil engineering technology program, with plans to start the program in 2020 with first graduation in 2022. Looking for pathways for graduates to continue in a degree program and would like to offer a bridge to other possibilities for degrees in civil engineering.

Columbia

- 15 to 25 students in dedicated Engineering courses
- College has opened a small second college, and is looking for a new head of college

College of the Rockies

- Has seen a high attrition rate, may be that algebra skills are holding students back
- There has been a re-arrangement of when courses were offered, allowing for more options for students.
- An upcoming retirement will mean a new full time and part math instructor will be hired.

A discussion followed regarding the high attrition rate and the assessment that math and calculus is the barrier for students. There were some suggestions that students do not appear prepared to take responsibility for the work they do.

Douglas College

- In second year with new credentials. Program is growing and have hired two new summer instructors and a full-time lab tech.
- In the process of changing diploma requirements to improve transferability to receiving institutions
- Are working on the launch of a fabrication and prototyping certificate

KPU

- Enrollment is lower than hoped for but has stabilized.
- Part-time students are now finding available courses
- About half the students in the engineering graphics course are in Arts or Business
- Program review is nearing completion

Langara

- About 1/3 of students in the Applied Science Diploma qualify for entering our Engineering Transfer Program after 1 year.
- Have not noticed the discussed decline in student quality and math skills, but with 700 applicants between the two programs they are more selective with the students accepted.
- Have switched to SolidWorks from AutoCAD for engineering graphics course

Northern Lights

- Offering a 1-year certificate in engineering, with students transferring to UVic and UofA
- 6 students, with no international students
- Are working to indigenize a first-year physics course (PHYS 103)

North Island College

- Completed first year awarding a foundations of engineering certificate
- Have added a "hands on" component to the engineering mechanics course, before students take the engineering design course. A short discussion about the benefits of projects was discussed. Several comments that students often spend all their time on the project and step away from other studies.

Northwest Community College

- Name is changing to Coast Mountain College on June 18.

- Working on an agreements letter for transfer to UVic
- Looking to partner with other institutions on a design course
- Also noted that calculus students are not well-prepared coming from high school.

Another discussion on the preparedness of students from high school followed: There is a need to push ministry to better prepare students for engineering, and to place an emphasis on academies in high school. It was noted that a similar conversation happens at many articulation meetings, and it may be useful to approach Ministry of Education (MoE) as a group with concerns. In some cases, faculty have been going to high schools to see what math and physics is taught. In most cases, it was above and beyond what was expected.

The articulation chair suggests that BCCAT consider an opportunity for articulation chairs (And select members) to collectively bring this message to the MoE, or to have the ministry attend JAM. This discussion should continue at the physics articulation meeting.

Okanagan College

- No full first year transfer program, students take a modified science curriculum
- No engineering design project transfer course, engineering mechanics is only taught at Kelowna campus
- Have a bridge program with UBCO with 15 total students.

Selkirk

- 2018 intake is down to 28 from 44, but applicants are much better prepared
- Had a 25% attrition rate
- Looking for a closer relationship with UBCO, and possibly delivering the 2nd year program at Selkirk
- Had first two international student applicants in 2018.

TRU

- Have received funding to start full four-year engineering program. Currently waiting to receive official approval to start program in fall 2018.
- Proposed an electrical engineering and computer engineer program, currently waiting to submit to DQAP.

TWU

- No large changes, numbers are typical.
- Thanks to UVic for proactively giving a draft transfer agreement.

A general question was asked to receiving institutions if students could defer admission for a year and take first year courses at a sending institution. After consulting academic policy, UVic, UBC and SFU stated this was not possible.

UFV

- Fewer students are doing full time one-year transfer, many are going over two years
- Introduced design elements to first year courses at request of UVic.

- Steps underway to turn the mechatronics diploma (engineering physics) into a full degree.
- Physics is no longer in the Faculty of Science. Now it is in the Faculty of Applied Technology and Science.

VCC

- Looking at draft transfer agreements to implement changes in calculus and physics courses
- Students can register at any time during the year, no cohort model. Students most complete 11 courses in a 16-month window. This can add some challenges to course scheduling.
- MATLAB has been incorporated into the linear algebra course. Have a virtual license for student access outside of the college.

VIU

- Looking forward to first program advisory committee with representatives from industry, EGBC, UVic, North Island College.
- Relunched a co-op program this year
- Expanding program to include a second year with diploma to leverage first year and give students employable skills in the current job market. About have the courses in this program would be transferable.

7. Major Receiving Institutions

The chair requested that if institutions find something that works well with students to please share (and highlight) in reports.

Full details for each institution can be found in the submitted reports attached to these minutes.

BCIT

- Many students do get transfer credit for courses complete. There is a desire to formalize this process and have a possible block transfer. A faculty member will be given a time release to deal with these transfer agreements.

BCCAT asked that articulation members should contact them with any questions regarding how to upload formalized agreements.

UBC-Vancouver

- Biomedical engineering program approved. Trying to facilitate a bridge for students moving into 2nd year.
- Manufacturing engineering program has gone through the senate. Looking for a bridge between UBCV and UBCO. First three years at either campus, then possible switch to other campus depending on the emphasis the student is interested in.
- Will likely need to adjust guaranteed admission GPA. Admission office is recommending 3.1 entering 2nd year starting in 2019. Note that general science is still on a competitive transfer. Will communicate the official admission GPA when it has finalized.

A question was raised about the cost of creating additional capacity. For mechanical engineering, need to add a least 60 for it to make financial sense. Likely similar for all the different programs. Also, labs are at capacity, and more students cannot fit unless another section added. Some seats may be freed up

due to new programs. How students will redistribute themselves remains to be seen. About 80 seats added in the biomedical program and 30 to 35 in the manufacturing program.

There was a request for data on historical GPA average for admission to different programs. Noted that historical GPA is based on UBC first year students. The data is more meaningful for relative difficulty for different engineering programs.

Action: UBC/Articulation Chair - Discuss how best to distribute historical GPA cut-off data for each discipline.

SFU

- Is beginning to investigate how college transfers are doing, and possible changing GPA requirements based off of this data. These changes would affect current agreements.
- Bulk of transfers comes from Fraser International College.

Question raised requesting details of Fraser International College (FIC). It is a college situated within SFU that only feed students into SFU programs. Pathway agreements is guaranteed, about 80-100% of students are international students.

Discussion followed regarding a similar program at UBC: Vantage College. Does UBC have numbers for Vantage College? In third year at Vantage College, first cohort was half the size as hoped for (37 instead of 75). Of 37, 25 transferred to second year. There is some attrition, but about 70% of students do transition. Numbers are now high 80s to low 90s but not growing as quickly as UBC had hoped. May look at students being admitted with a clear pathway to either UBCV or UBCO.

UNBC

- Continue to run a joint environmental engineering program with UBC. Program is successful. Take in about 50 students. Attrition due to transit to UBC – can only send 40.
- Has seen a slight decrease in applications into engineering this year, possibly based on high school enrollments.
- UNBC will allow students to defer a year and take courses at a different school.

University of Alberta

- Change for this year: replaced complimentary elective with a technical English class.
- Beginning to look at a first-year design course that aligns with the common curriculum discussed at this meeting.
- Interested in the potential for inter-province transferability.

UVic

- Have seen decrease in the demand for the mechanical engineering program, but a large request for software engineering seats.
- Data is provided showing how transfer students do over time compared to local students. This information can be found in the report. This data was very well received – data showing that transfer pathways lead to an equal result is very useful.

8. Update on BCCAT TI Project

Brian Dick presented an update on the common engineering curriculum for the BC post secondary sector. The BC transfer system can help meet demand for new engineers in BC. The goal of a common curriculum is to provide clarity to the receiving institutions and sending institutions with respect to the skills that incoming students are equipped with, and to have common courses that are transferable to multiple institutions. It was noted that admission standards and time of completion decisions are still left up to receiving institutions.

Action: Brian/Articulation Chair - Slides from the presentation will be made available to the articulation committee members, keeping in mind that all the information is a draft and has not been confirmed or finalized.

Discussion

- Regarding physics courses, is there the potential for determining minimum time requirements on each of topics. Is there the potential for a focus on more depth instead of breadth of topics?
- How much depth of WHMISS training is required? Often this is rolled into an online multiple-choice exam and is like what employees need to go through. Some schools may require more depth.
- Good to see the effort to help students that cannot get into large schools to see what their options are. Is it possible to work with admissions to direct students to other options if they are not accepted into large schools? Students could be directed to a common website where this information could be found.
- The possibility of one applied system (like the Ontario system) to help coordinate the application process. This system is being developed in BC. Some are not using the system yet because their current application system have already had significant development work put into them.

Breakout groups of 5 people (all including a representative from a major receiving institution) to discuss the following questions / issues:

- *What challenges can be send with the implementation of this idea?*
- *A gap analysis at what your institution would need to implement this idea?*

Action: Group Recorders - Provide key discussion points in summary to the chair.

Highlights

- This system gives students the chance to study neat home with the support of family and friends, while still providing opportunity and options of where to go after first year
- Students would be able to see different aspects of engineering before committing to a specific program or institution
- Questions regarding how transferability between courses can be ensured. What degree of coverage is required? What are the core / option topics?
- Capacity to deliver certain introduction courses may be an issue. Could a distance education design course receive accreditation? Or a partnership between institutions?

- Minor difficulties may include: difficulty finding faculty, concern about mixing learning outcomes between courses that span two terms.
- What can receiving institutions do to help provide guidance to sending institutions? Ideas included sharing relevant material and having instructors observe classes.

Next steps:

- Articulation of learning outcomes and course design.
- There may be the possibility to ask for one time capacity building or curriculum development funding from AVED.

Action: Sending Institutions (ALL) - Undertake a gap analysis to determine what is needed to adapt to the proposed coming curriculum (Due: 31-May-2018).

9. Location of upcoming meetings.

UBC-O was the planned location for the 2019 meeting. They still agree to host the meeting next year. The date is planned for 02-May-2019 (Thursday).

Action: Brian/Articulation Chair - Meeting details to be provided to articulation committee members.

After a call for volunteers for 2020, KPU and BCIT were put forward as possibilities.

Action: KPU / BCIT - Confirm to Articulation Chair acceptance of hosting the articulation meeting in 2020.

The date for the 2020 meeting will need to be determined. Typically, the engineering and physics articulation run on the first Thursday and Friday of May. In 2019, the first Friday is May 1st, so the engineering articulation meeting may be April 30th.

Action: Brian/Articulation Chair - Finalize the date of the 2020 meeting based on, primarily, academic schedule

10. Adjournment

Meeting was adjourned at 4:20 PM.