

March 2020

Student Experiences in EOAS Specializations

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Executive Summary

To inform the Department of Earth, Ocean and Atmospheric Sciences (EOAS) self-study to be conducted in late 2020, a specialization perceptions survey was administered to all undergraduate students (n=128). This was followed by focus groups to understand some of these results in more detail (n=4). Survey and focus group broad topics include student choice of specialization, career plans, career pathways, courses and advising, the EOAS community and sense of belonging and general perceptions of the EOAS learning experience.

The majority of students felt that their EOAS learning experience has been positive overall. Students in focus groups highlighted their interdisciplinary and practical courses and the enthusiastic, knowledgeable and caring faculty in EOAS. Students would like more information on degree pathways and potential career options, and are enthusiastic about building the EOAS community through events that span undergraduates, graduates and faculty/staff. Many wished their specializations had more development in both computing and field skills, which current EOAS teaching and learning initiatives are well poised to address. Students clearly stated that they value opportunities like this to provide feedback and shape the future of the department.

Introduction and Rationale

This report details the results of an investigation of student experiences in the Department of Earth, Ocean and Atmospheric Sciences (EOAS) at the University of British Columbia (UBC). It aims to broadly capture experiences across all specializations and year levels in EOAS, including classroom and extracurricular activities. The work was initiated primarily to inform a self-study document to be prepared in advance of an external departmental review (scheduled for late 2020).

Similar investigations have previously been conducted in EOAS. In addition to previous departmental reviews, assessments of student experiences have been documented in two recent cases, though there are certainly others. An extensive exit survey of graduating students across EOAS (then the Department of Earth and Ocean Science) was conducted in 2009 (Caulkins et al., 2015). In December 2018, a six question survey was administered to geophysics students and graduates, to obtain some initial ideas about that specific specialization and potential questions that could be asked in this broader survey (Jolley, 2019). More details about these investigations may be found in the referenced reports.

This study uses a survey (n=128) and focus groups (n=4) to elucidate different experiences of students in EOAS, first broadly and then in more detail. Survey results have been organized by theme, covering student choice of specialization, career plans, career pathways, courses and advising, the EOAS community and sense of belonging and general perceptions of the EOAS learning experience. Results are discussed in relation to each theme, potential future work is highlighted and conclusions are drawn.

Methods

Survey – April 2019

As specifications for the self-study document are at the discretion of the department, survey topics were discussed at length and decided upon by the EOAS Science Education Group (Sarah Bean Sherman, Alison Jolley, Francis Jones and Stuart Sutherland) and the Associate Head, Undergraduate Affairs (Tara Ivanochko). Many of the questions used were verbatim or adapted from the exit survey previously

developed by Caulkins et al. (2015). A mix of fixed response and open-ended questions were included, with options for “other” and “explain your answer” where more details were sought. Survey questions may be found in Appendix 1.

The specializations survey was sent to all EOAS undergraduates (n=550) in April 2019. Students were offered an entry in a draw for one of five \$50 UBC Bookstore gift cards on completion of the survey. For students to be registered in EOAS, they must be declared majors. Therefore, all respondents were in second year or above. A total of 128 students completed the specialization survey, for a response rate of 23%. Demographic details are included in the “Study Population” section below. Survey responses were analyzed using Microsoft Excel, and thematic analyses were conducted on the open-ended questions.

Focus Groups – November 2019

Focus groups were planned as a companion to the survey and to be completed shortly after. However, the late timing of the survey at the end of the academic year meant that the focus groups had to be delayed until fall 2019 when students would be back on campus. Although this meant that the survey would not be as current in their minds as originally intended and we may have lost participants who left campus, there were benefits to this seven-month gap between the survey and the focus groups. Students likely couldn’t remember specific responses they had given on the survey, and thus the focus groups elicited fresh thoughts. This time may have presented more opportunity for reflection and perspective over the summer months, especially in relation to industry and research employment, as it is common for EOAS students to work in between academic years.

The survey included a question that asked if students were interested in being contacted for future participation in a focus group with lunch provided. 30 students responded “yes” to this question, and they were contacted in October 2019 asking for their availability via a Doodle poll. Five students completed the poll, and four students showed up to their scheduled focus groups. These students were from geological engineering, geology and geophysics. As the EOS major, oceanography, environmental science and atmospheric science were not represented in this group, the undergraduate advisors of these programs were contacted for recommendations of potential student participants. Only the oceanography advisor responded, but the students that were suggested did not respond to the personalized email sent to them. Unfortunately, this meant that these specializations were not represented in the focus groups. Further demographic details are included in the “Study Population” section below.

Study Population

Basic demographic information was collected from the survey respondents (Table 1). The majority of students who responded to the survey identified as women (54.7%) and were 21 years old or younger (53.9%). There was near equal representation from 2nd, 3rd and 4th years, though proportion of responses by specialization varied widely. The vast majority of students were not transfer students (78.1%) and did not support family financially while in school, either in whole or in part (85.2%). Most students’ longest yearly commute was 20km or less (75%).

Table 1. Survey respondent demographics.

	Frequency (total n=128)	Percentage
Gender identity		
Man	46	35.9
Woman	70	54.7
Non-Binary	0	0.0
No Answer	12	9.4
Age		
18-19	14	10.9
20-21	55	43.0
22-23	34	26.6
24-25	7	5.5
26-30	6	4.7
31+	0	0
No Answer	12	9.4
Year level		
2 nd	48	37.5
3 rd	42	32.8
4 th	38	29.7
Specialization		
Atmospheric sciences	3	2.3
Combined major (including oceanography)	17	13.3
Environmental sciences	37	28.9
EOS major	5	3.9
Geological engineering	36	28.1
Geology	24	18.8
Geophysics	6	4.7
Transfer students		
Yes	16	12.5
No	100	78.1
No Answer	12	9.4
Support family financially while in school		
Yes	6	4.7
No	109	85.2
No Answer	13	10.2
Longest yearly commute (in km)		
0-5	38	29.7
6-10	27	21.1
11-20	31	24.2

	Frequency (total n=128)	Percentage
21-30	11	8.6
30+	9	7.0
No Answer	12	9.4

The EOS major is the only specialization where more than half of student households spoke something other than English as their first language growing up (Figure 1). Over 30% of geology and geological engineering students also grew up in households that spoke something other than English as their first language. In all other specializations, less than 20% of students grew up in non-English as a first language households. The most common other languages spoken were Mandarin (n=8), Cantonese (n=4) and Bengali (n=4). Over 75% of students in nearly all specializations rated their ability to read and write in English as “excellent” (Figure 2). However, this number was slightly lower in geological engineering, with only 60% of students reporting the same. The other 40% of geological engineering students rated their ability to read and write in English as “good”.

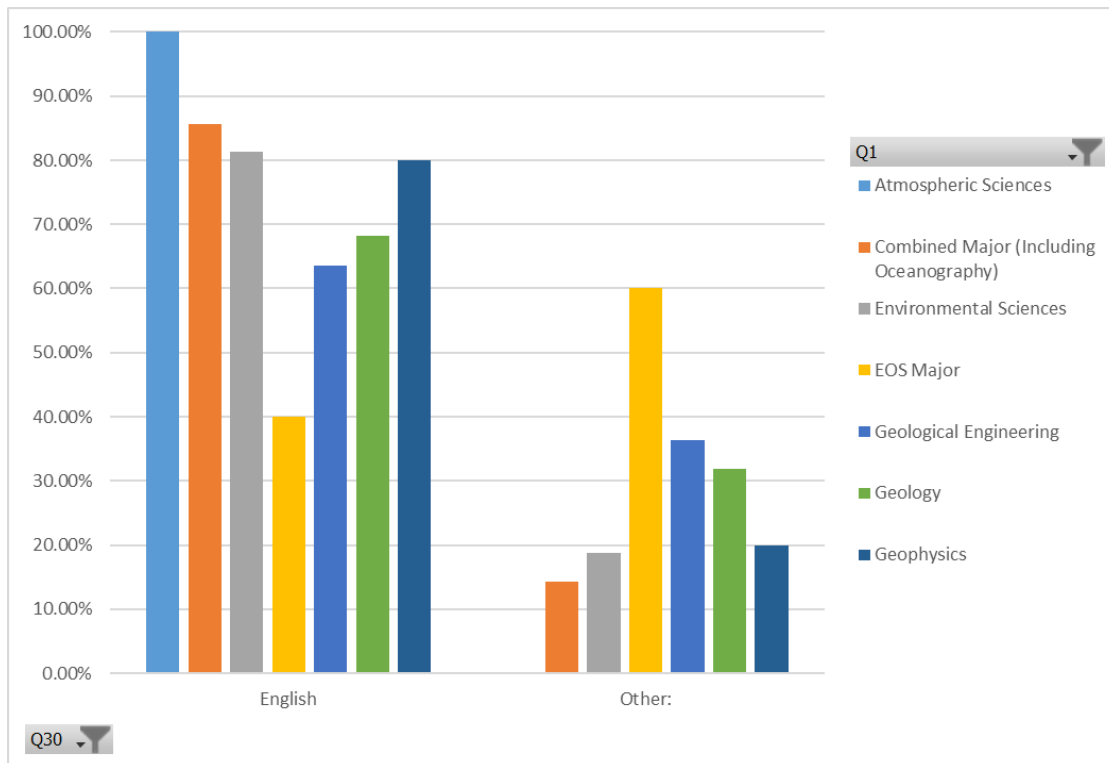


Figure 1. Proportion of students within each specialization whose households spoke English or other languages as their first language growing up.

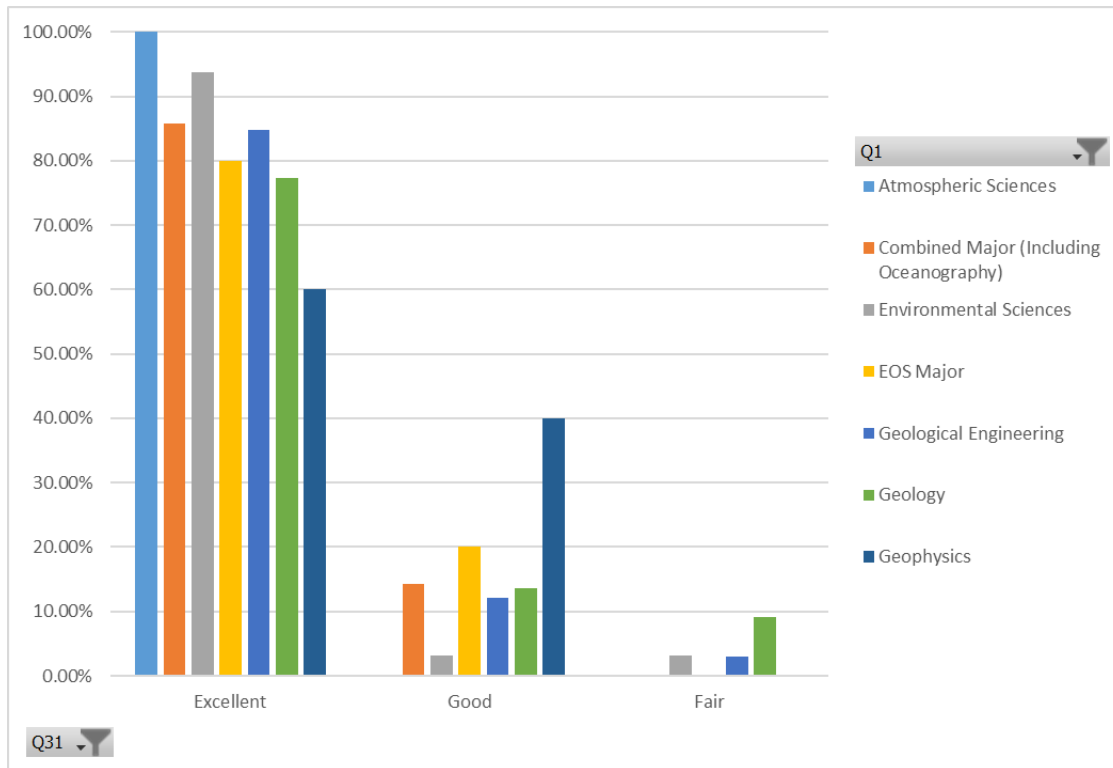


Figure 2. Student perceptions of their ability to read and write in English.

Many EOAS students work during the term and/or the summer (Figure 3). During the summer, the majority (68%) of students work during weekdays, and 40-50% work during evenings or weekends. During the term, around 30% of students work during weekdays, evenings and weekends. For those who worked during term time, we asked the number of hours on average that they worked per week (Figure 4). Of students who work during term time, the vast majority work 10-20 hours per week. A small number of students work less than 10 hours and over 20 hours, with the maximum being 55 hours per week.

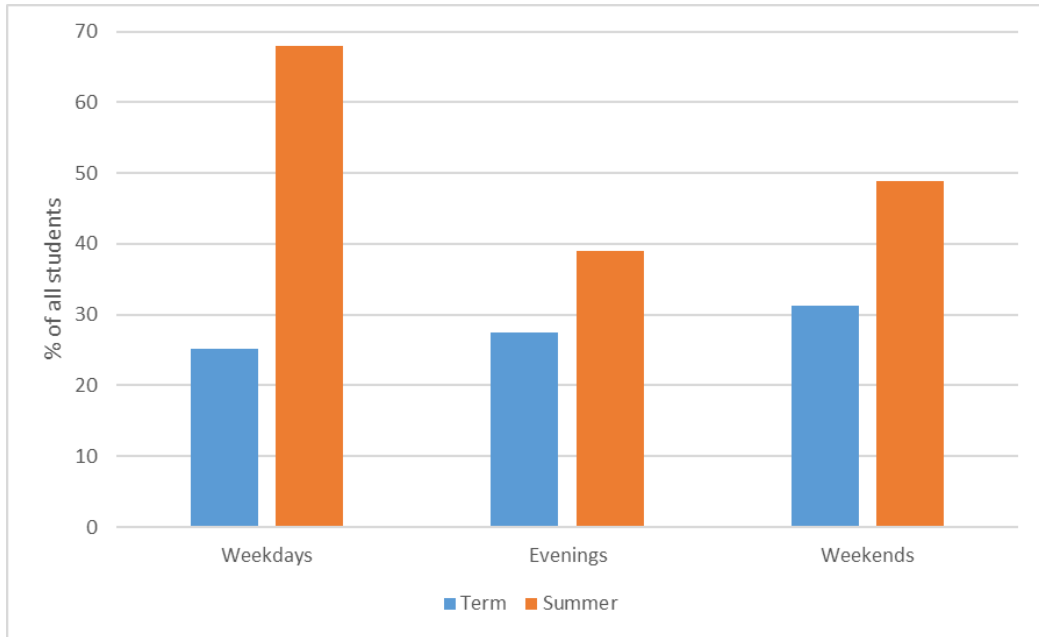


Figure 3. Percentage of students that work during different times over the term and summers.

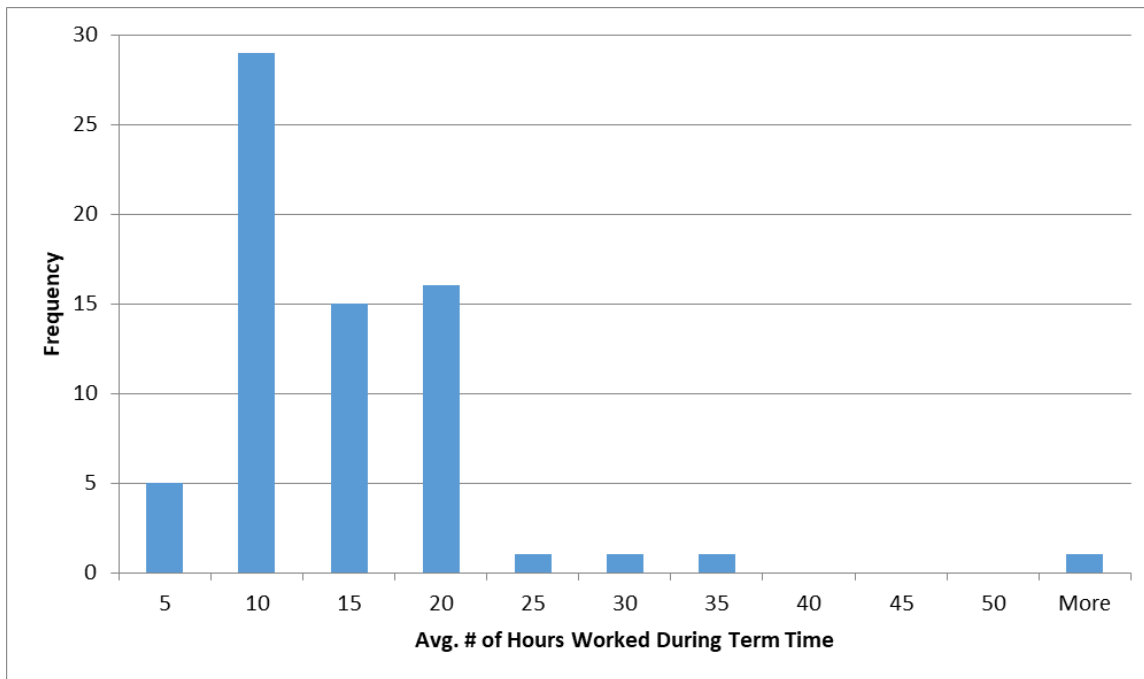


Figure 4. Average number of hours worked per week for students that work during term time.

Four students participated in interviews or focus groups to understand their responses in more detail (Table 2). These students all identified as women and ranged from 18-23 years old. Three were in third year and one was in fourth year. Two were from geological engineering, one was from geology and one was from geophysics.

Table 2. Focus group participant demographics.

<i>Frequency (total n=4)</i>	
	<i>Gender identity</i>
<i>Woman</i>	4
	<i>Age</i>
<i>18-19</i>	1
<i>20-21</i>	1
<i>22-23</i>	2
	<i>Year level</i>
<i>Third Year</i>	3
<i>Fourth Year</i>	1
	<i>Specialization</i>
<i>Geological Engineering</i>	2
<i>Geology</i>	1
<i>Geophysics</i>	1

Results

Survey

For ease of interpretation, survey results have been grouped by theme. The majority of results presented differentiate responses by specialization; however, it should be cautioned that some specializations have limited enrolment and had six or fewer students respond (atmospheric sciences, EOS major and geophysics). Results for these specializations should be taken with extra caution when making generalized interpretations.

Student Choice of Specialization

For students in nearly all of EOAS specializations, the UBC calendar was the most common place that students first heard about their specialization (Figure 5). Geological engineering was the only exception to this, where it was more common for students to first hear about their specialization from other students at UBC. Greater than 20% of both atmospheric sciences and geology students reported “other” responses for where they first heard about their specialization. For atmospheric sciences, this was the department website. For geology, this included professors, UBC outreach, transfer colleges and independent research on career prospects with a Bachelor’s degree.

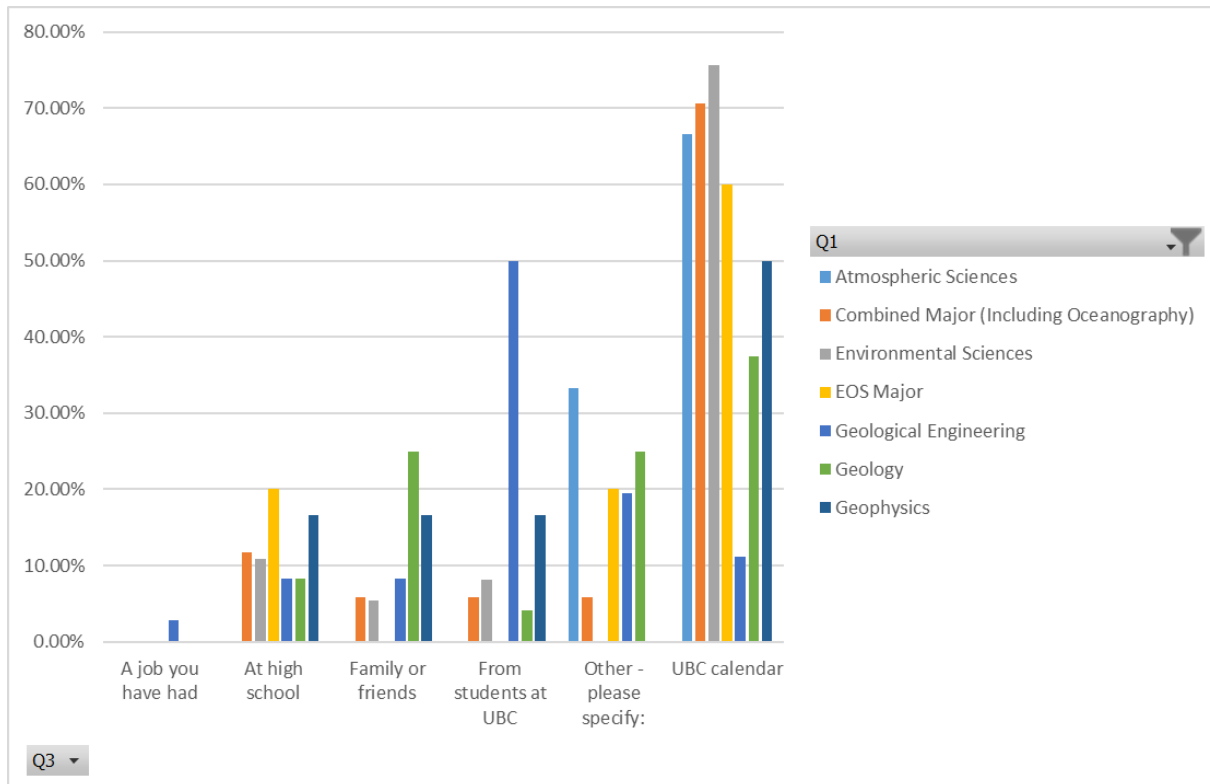


Figure 5. Student responses to the question “Where did you first hear about your chosen specialization?”.

Over 60% of the students in each of the EOAS specializations considered other specializations across UBC. 25% of other specializations considered were other engineering programs by engineers (e.g., a geological engineer that considered chemical and biological engineering), 23% were biological sciences and 20% were other specializations within EOAS (e.g., an environmental science major that considered geology). Other popular specializations considered were: chemistry (9% of other specializations considered), physics and astronomy (8%) and geographical sciences (5%).

Students were asked to select all the reasons that they chose to enrol in their specialization. By far the most common responses were: “it sounded interesting” (44%) and “it supports a career path I am considering” (39%). Few students reported that their specialization was “just a placeholder” (8%), it was not their first choice and they were placed in it (7%), or offered additional reasons for enrolling (3%). Other reasons for enrolling included: a greater sense of community than UBC more broadly, being able to get out of the office, the program offered more freedom, transfer credits were appropriate, wanted to avoid course requirements in other sciences and was not interested in any other specializations.

EOSC 100-level courses influenced the choice of students in particular specializations to major more than others (Figure 6). 50% of geology majors were influenced by EOSC 100-level courses, followed by 40% of EOS majors and 35% of combined majors (including oceanography). Less than 5% of students in each of the other specializations were influenced by EOSC 100-level courses.

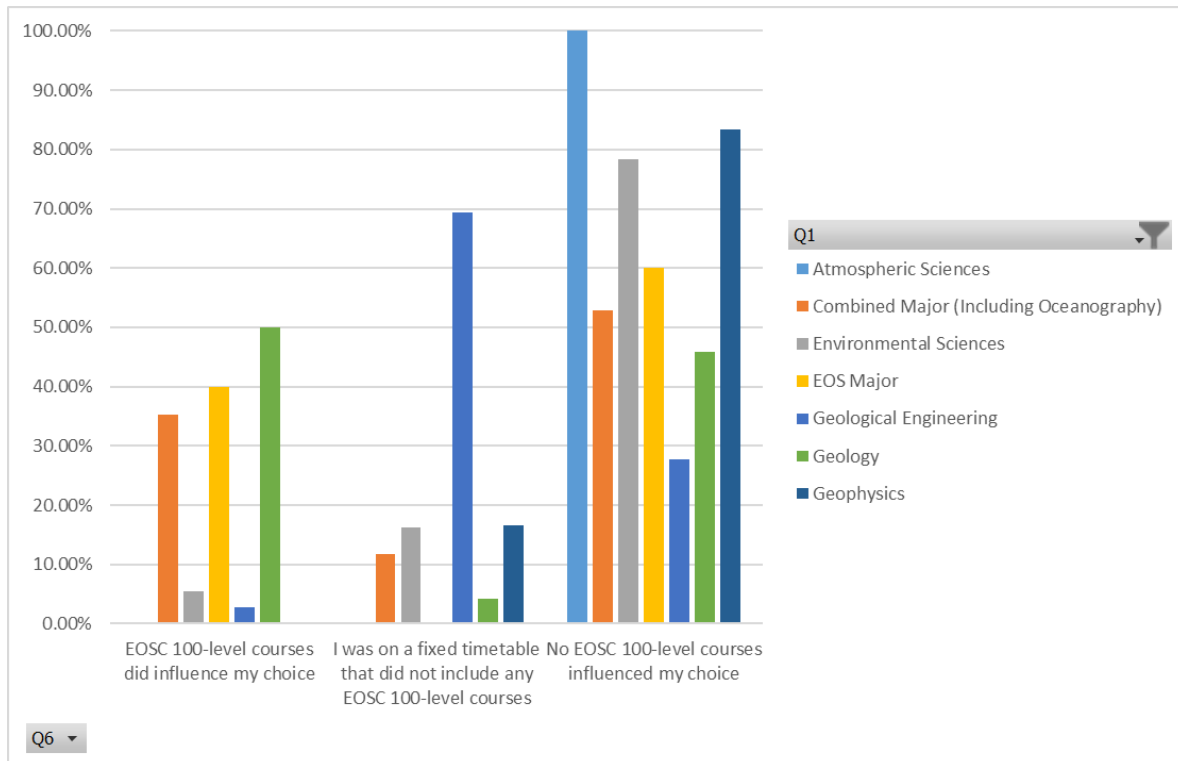


Figure 6. Student responses to the question “Did any EOSC 100-level courses contribute to your choice of degree pathway?”.

Less than 30% of students in nearly all of the specializations in EOAS attended the meet your major event. Over 50% of the students in atmospheric sciences and combined majors attended the event. Of the students who attended the event, less than 10% in nearly all of the specializations said it contributed to their choice of major. The only exception to this was students in combined majors – 35% said the meet your major event contributed to their choice.

Student Career Plans

Approximately 50-60% of students in most EOAS specializations intend to pursue a specific career related to their degree after graduation (Figure 7). This was higher for atmospheric science and geological engineering students, at 100% and 75%, respectively. Of those who had known career intentions, geotechnical work, geology and exploration, and other consulting and environmental work were the most commonly mentioned (Figure 8). Graduate school, teaching, biology, general research and hydrology were also frequently mentioned. A lesser number of students described public sector careers, further professional degrees such as law or medicine, even urban planning and fire fighting.

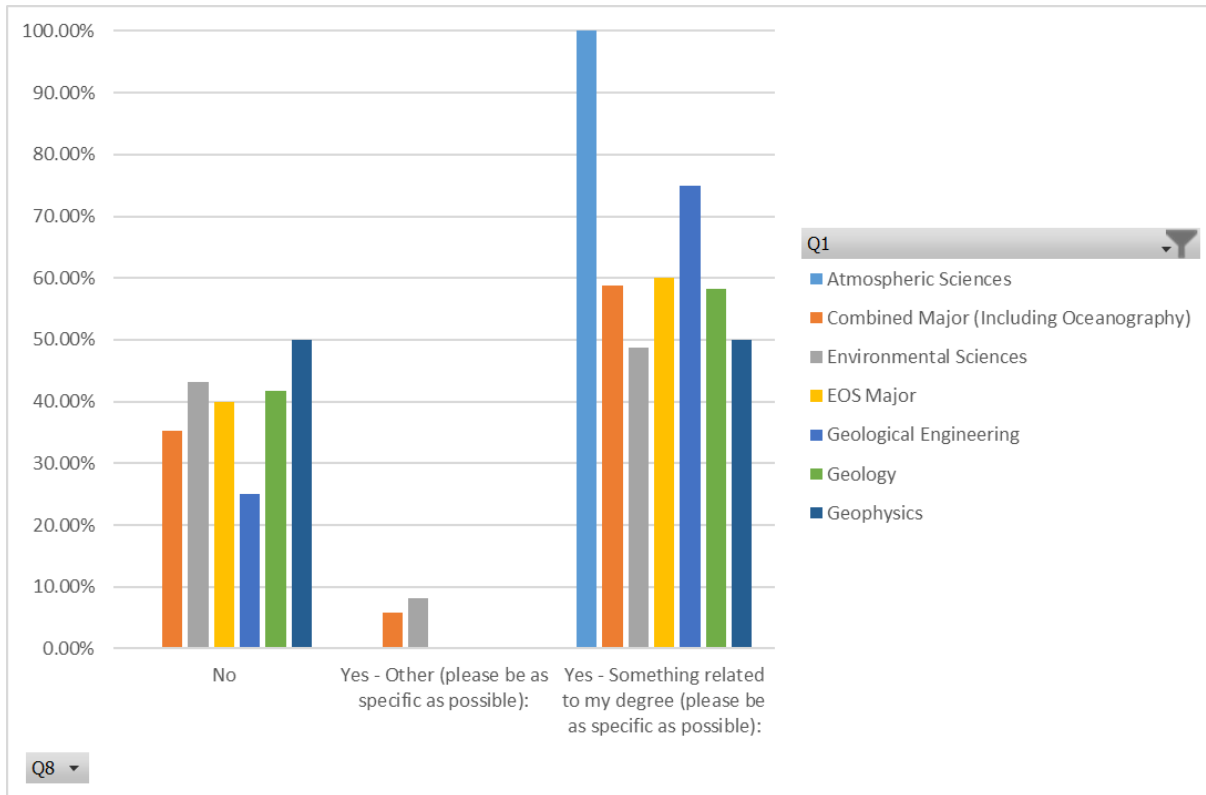


Figure 7. Student responses to the question “Do you know what career (including graduate school) you want to pursue upon graduation?”.

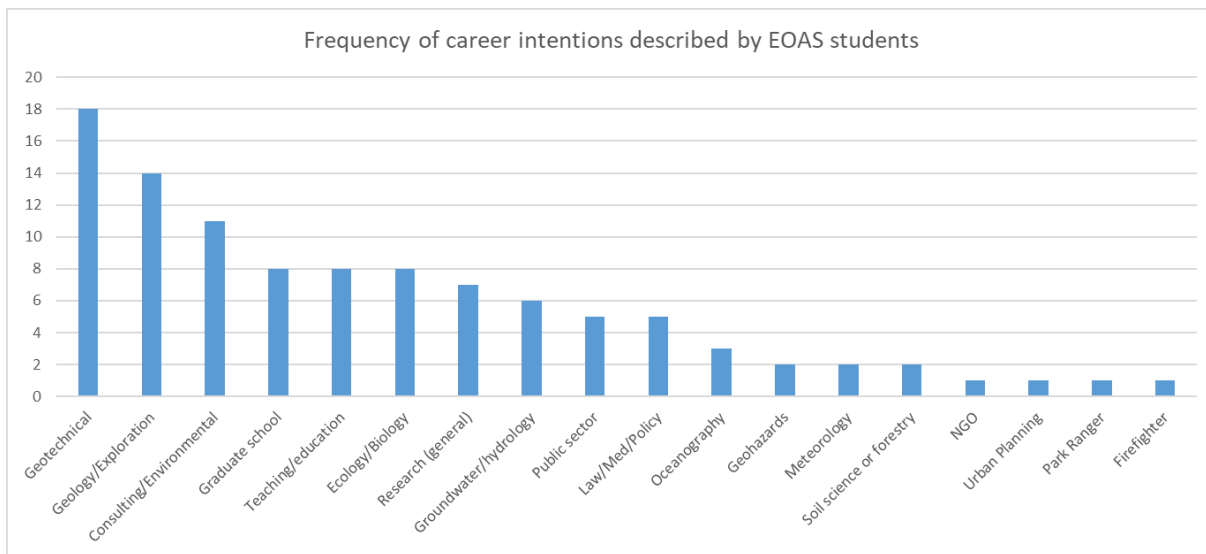


Figure 8. Coded descriptions of intended careers described by students.

Students in atmospheric science, geological engineering and geology are almost entirely interested in the typical professional registrations associated with these degrees (Meteorology, P. Eng., P. Geo; Figure 9). The majority of students in the EOS major intend to register as a P. Geo (60%), but the other 40% are not interested in professional registration. Half of students in environmental science are not interested

in professional registration either. The other students in environmental science are split between R.P. Bio (22%), P. Ag. (11%), P. Geo (8%), P. Eng. (5%) and meteorology (3%). The majority of geophysics students are interested in P. Geo registration (60%), and the other students are interested in meteorology registration (20%) or no professional registration (20%). Almost 70% of combined majors students are not interested in professional registration. The others are interested in R.P. Bio (20%) or meteorology (6%) registration.

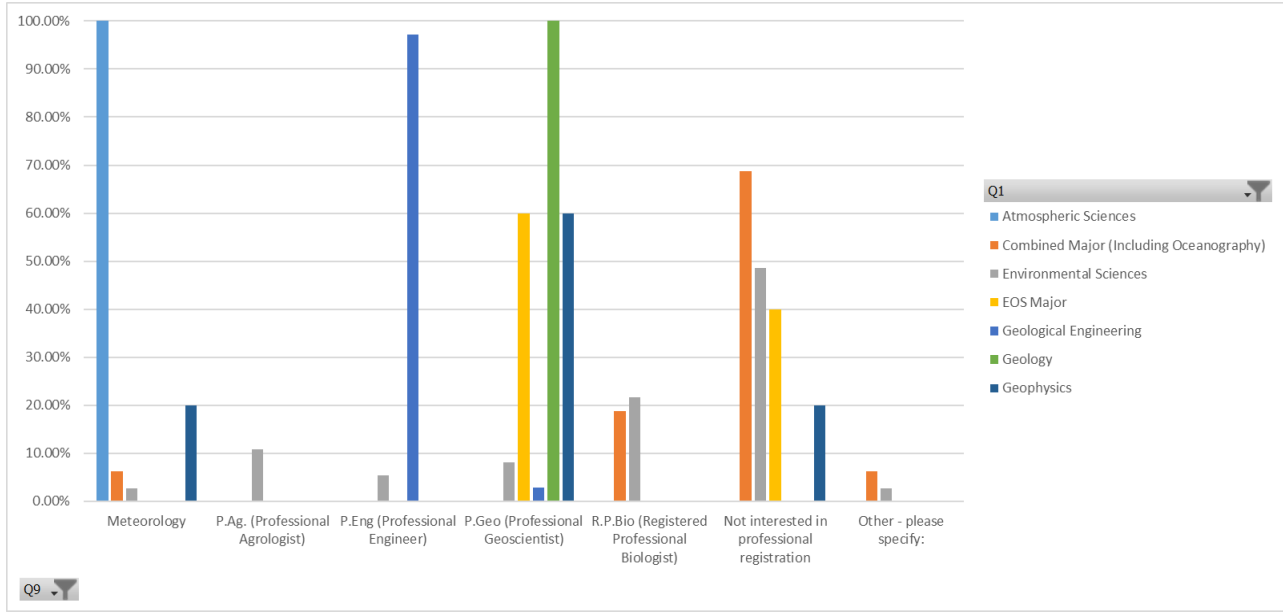


Figure 9. Percentage of students within each degree that intend to register with each professional organization.

Students are varied in how easy they perceive obtaining professional registration will be. Most geology and geological engineering students feel that it will be easy, whereas atmospheric sciences and environmental sciences students expect it to be difficult (Figure 10). EOS major, combined major and geophysics students are much more split. The most common reasons described for expected registration difficulties are a lack of knowledge about the process/requirements (especially early in their degrees), degree requirements that don't encompass all of the courses needed (necessitating credits over the standard course load) and concerns about their ability to obtain the work experience needed. Other described difficulties include: concerns about low grades and competition (Canadian Meteorological and Oceanographic Society endorsements), number of steps needed beyond graduation (e.g., ethics exams).

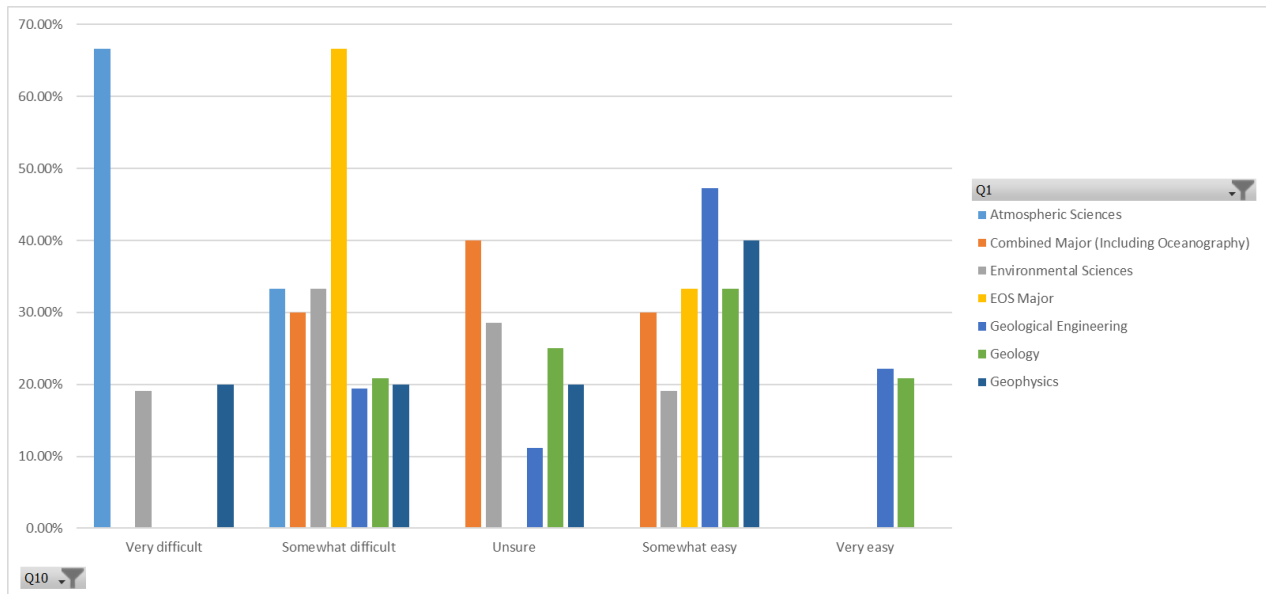


Figure 10. Student responses to the question “Do you think it will be easy or difficult to fulfill all your requirements for your professional registration?”.

Degree Pathways, Courses and Advising

EOAS students are largely in agreement that their courses felt well connected through their degree (Figure 11), that they were able to find electives (Figure 12) and that they have enough time to complete their degree requirements (Figure 13). EOS, combined and geology majors reported the most difficulty with finding electives (Figure 12). The most common reasons that students struggled with finding electives included: UBC not offering enough oceanography or marine science courses, fitting in alternate year courses, lack of connections from courses outside EOAS to EOAS courses or specializations, lack of knowledge about electives, and the availability of upper year electives.

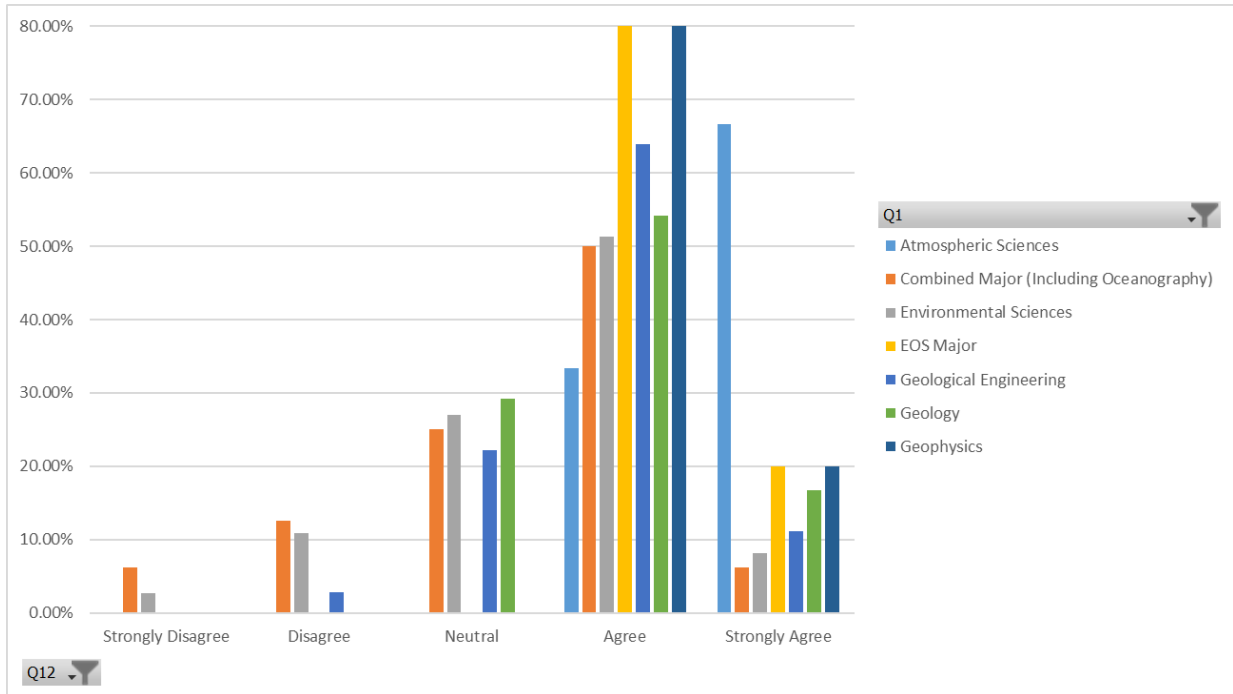


Figure 11. Student responses to the statement “Courses I have taken feel well connected with others in my specialization representing a sensible flow of knowledge and skills development”.

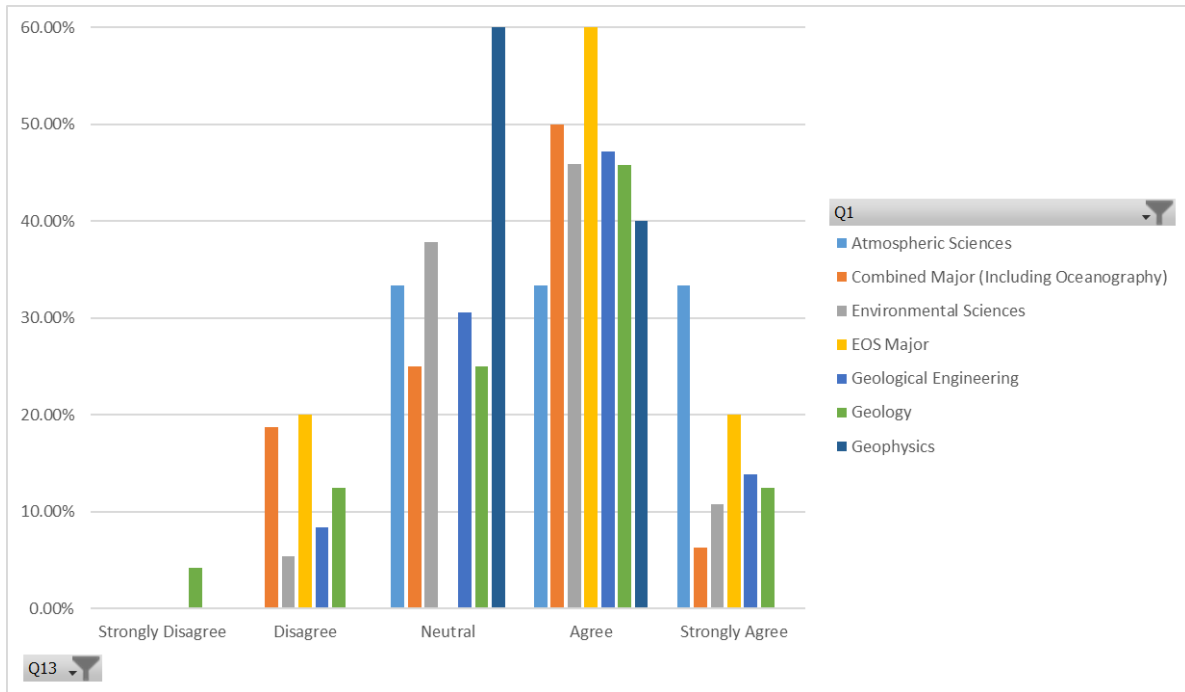


Figure 12. Student responses to the statement “I had no difficulty in finding electives for my degree specialization”.

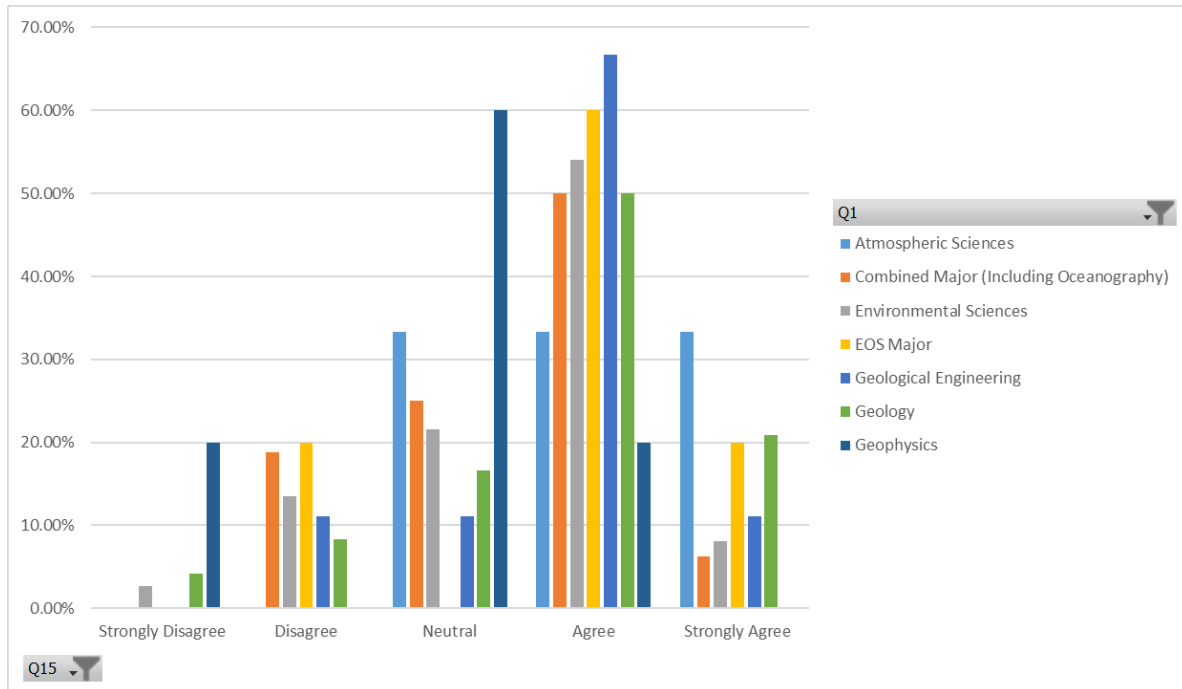


Figure 13. Student responses to the statement “I have sufficient time to meet the requirements of my degree”.

Students were asked if they had any additional skills or areas of knowledge they wished to develop in their degrees. Field experience and computer science skills (programming and modelling) were by far the most commonly indicated (Figure 14). GIS and other software (i.e., discipline- or industry-specific) were also widely mentioned, and if combined with computer science skills, would greatly surpass the interest in additional field skills. Commonly mentioned specific topics included: oceanography/marine science, statistics, rock mechanics and socio-environmental studies/policy. Lastly, many students indicated an interest in developing networking and other professional skills, industry-specific technical skills and research skills.

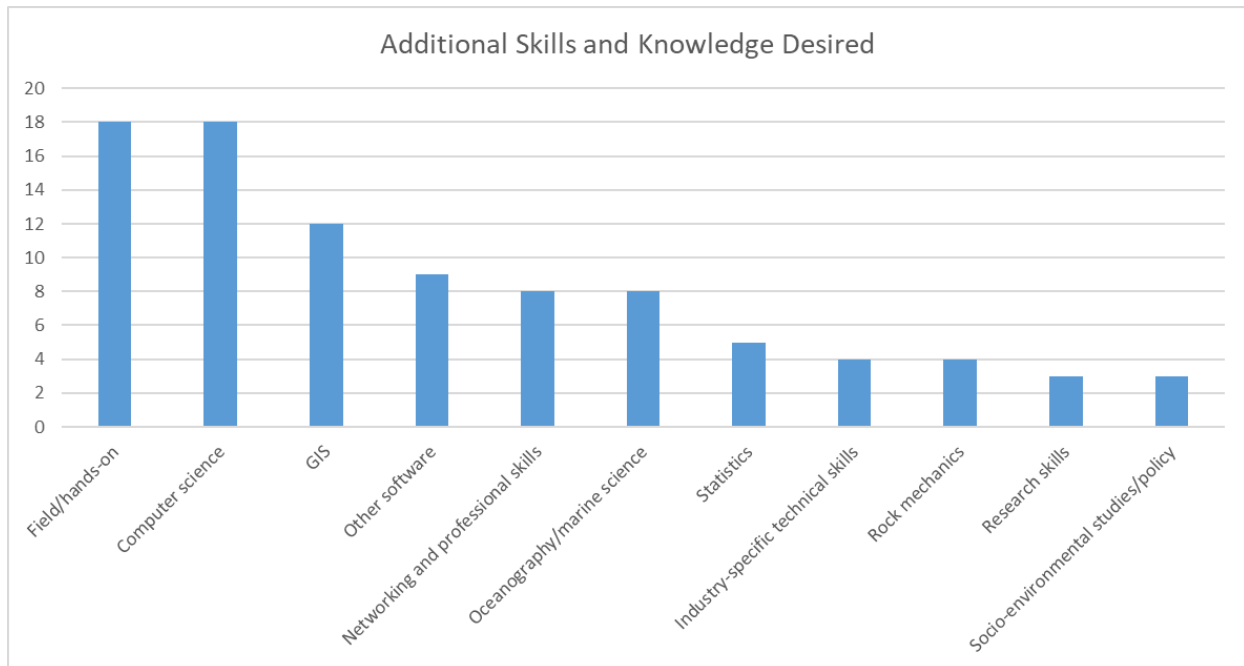


Figure 14. Additional skills and knowledge students wish they had in their degrees to better prepare them for their intended careers. Responses indicated by three or more students are included.

Students in most EOAS specializations find it easy to get access to departmental advising (Figure 15). 33% and 40% of students in atmospheric sciences and geophysics, respectively, do not find it easy to get access to departmental advising. 53% of environmental science students are neutral on access to advising. Suggestions for how to improve advising included: introductions from advisors (over email and in lectures) so students know who they are/what they can advise on and are not intimidated, offer drop in advising times, advisors being more responsive to emails, have more advisors for each program, provide a list of accepted core course substitutions and update the information on degree navigator so it is accurate.

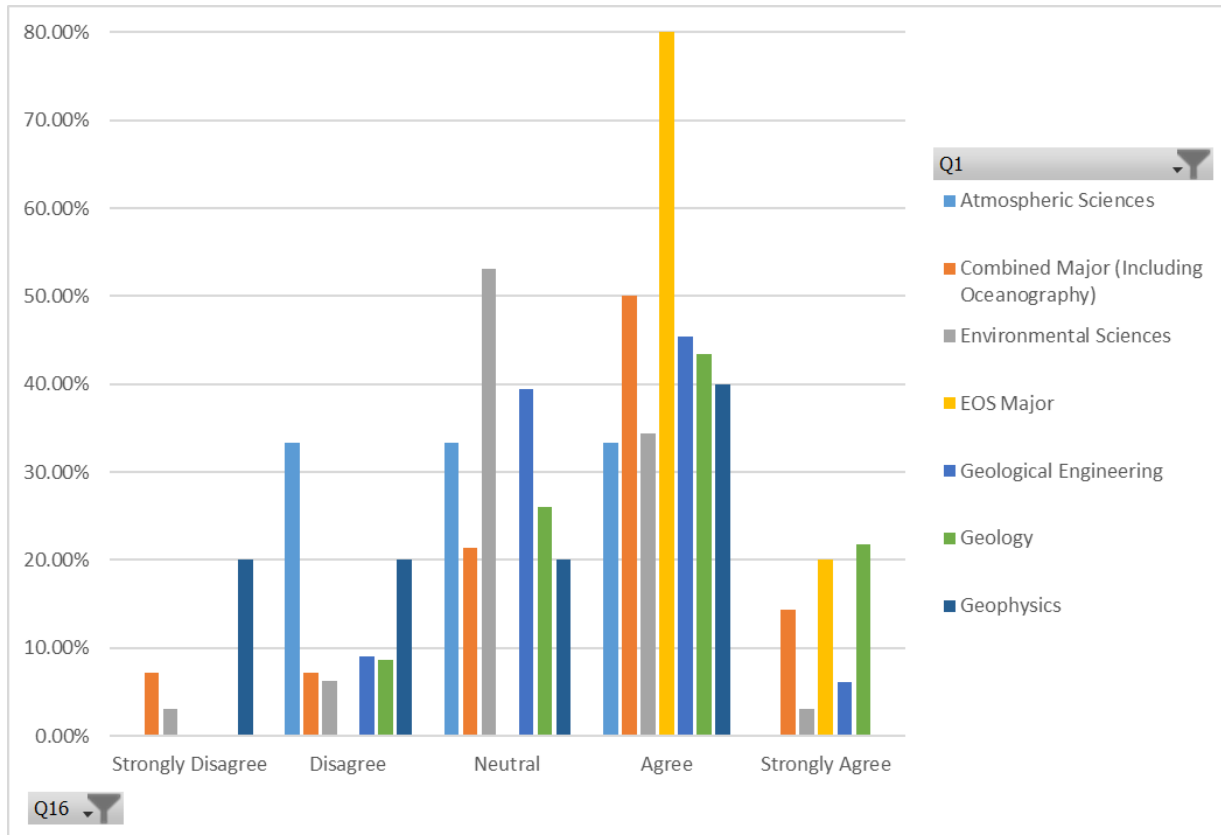


Figure 15. Student responses to the statement “I find it easy to get access to departmental advising”.

Students largely agree that their degree requirements are easy to understand (Figure 16). When asked for suggestions about how degree requirements may be better understood, student suggestions mostly related to having clearer, more consistent information that was easily visualized and accessed digitally. Students pointed to inconsistencies between the UBC calendar, degree navigator and degree checklists from other departments. Students also suggested having more comprehensive course lists for each specialization and specific streams within them, including specific information about course equivalencies (and why you would pick one course over another), a list of pre-requisites needed for each course/level and related electives. A smaller number of students suggested having professional registration more aligned with degree requirements and the need to communicate course lists and degree requirement information earlier on in students’ degrees.

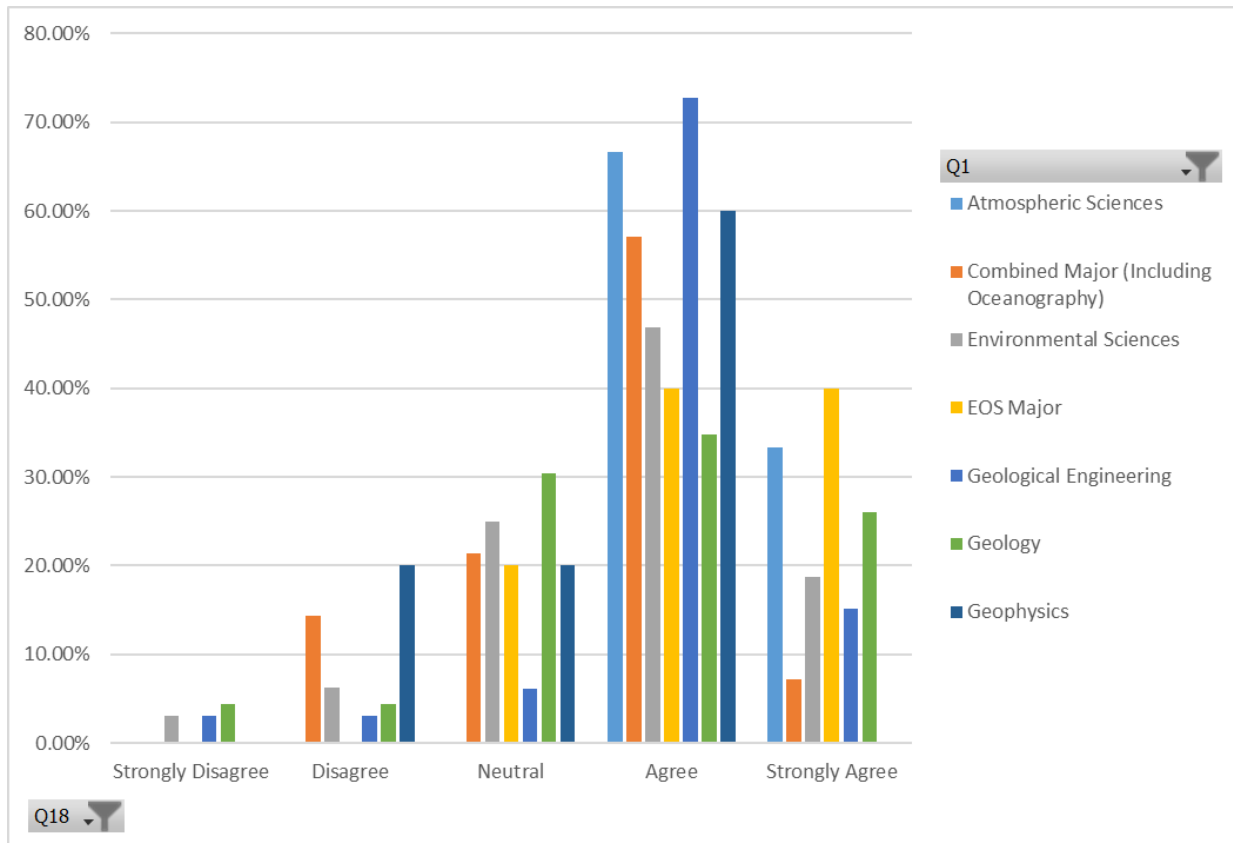


Figure 16. Student responses to the statement “My degree requirements are easy to understand”.

Students were also asked about any courses that have delayed or are expected to delay their graduation. Within EOAS, by far the most common courses reported were the geology and geological engineering field schools (EOSC223/328/428; n=8/4/10). Many students (n=7) also mentioned alternate year and upper level courses being a challenge. A small number of students (n=3) mentioned EOSC 211. Outside of EOAS, BIOL courses were the most common registration challenges for students (n=7). 3 students or less mentioned other courses outside of EOAS, including CHEM, GEOB/G, MATH, STAT and MICB.

The EOAS Community and Sense of Belonging

Students were asked questions about the community and common spaces in EOAS. Sense of community varied considerably by specialization. Over 65% of students in geology, geological engineering and the EOS major said they felt like they experienced a strong sense of community in EOAS (Figure 17). 40% or less of students in geophysics, combined major, atmospheric sciences and environmental sciences reported feeling a strong sense of community in the department.

Further to this, students were asked what suggestions they have to improve the sense of community in EOAS. The most common responses by far were social events and events that specifically promoted interactions between specializations. Some students mentioned that it was important for EOAS to organize events instead of them being solely run by the student clubs, both to garner interest and to promote inclusivity. Students also highlighted the importance of faculty and graduate students being present at department-wide events (for example, a “meet your prof” night). Less commonly mentioned

suggestions included more club visibility and activity, earlier visibility of clubs and events for first and second year students, courses that included students from a variety of specializations, more group projects, career-related events and public talks or opening the departmental colloquia to undergraduates.

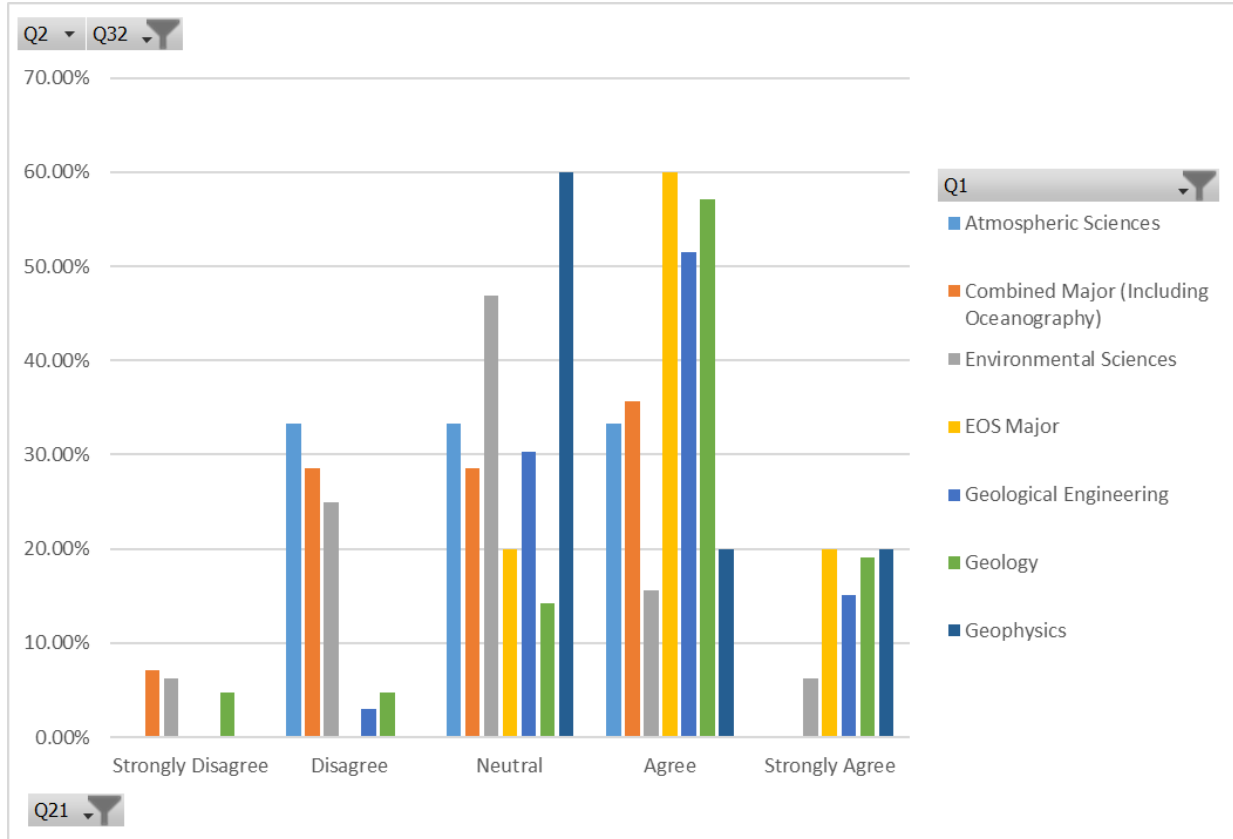


Figure 17. Student responses to the statement “I experienced a strong sense of community (belonging) in EOAS”.

Student involvement in clubs varied by specialization, but was generally low. 40% or more of students in the combined major, geological engineering, geology and geophysics reported that they were “somewhat” or “very” involved in the club related to their specialization (Figure 18). Geological engineering had the highest reported involvement at 60% “somewhat” or “very” involved. In contrast, 25% or less of students in atmospheric science, environmental science and the EOS major reported the same level of involvement.

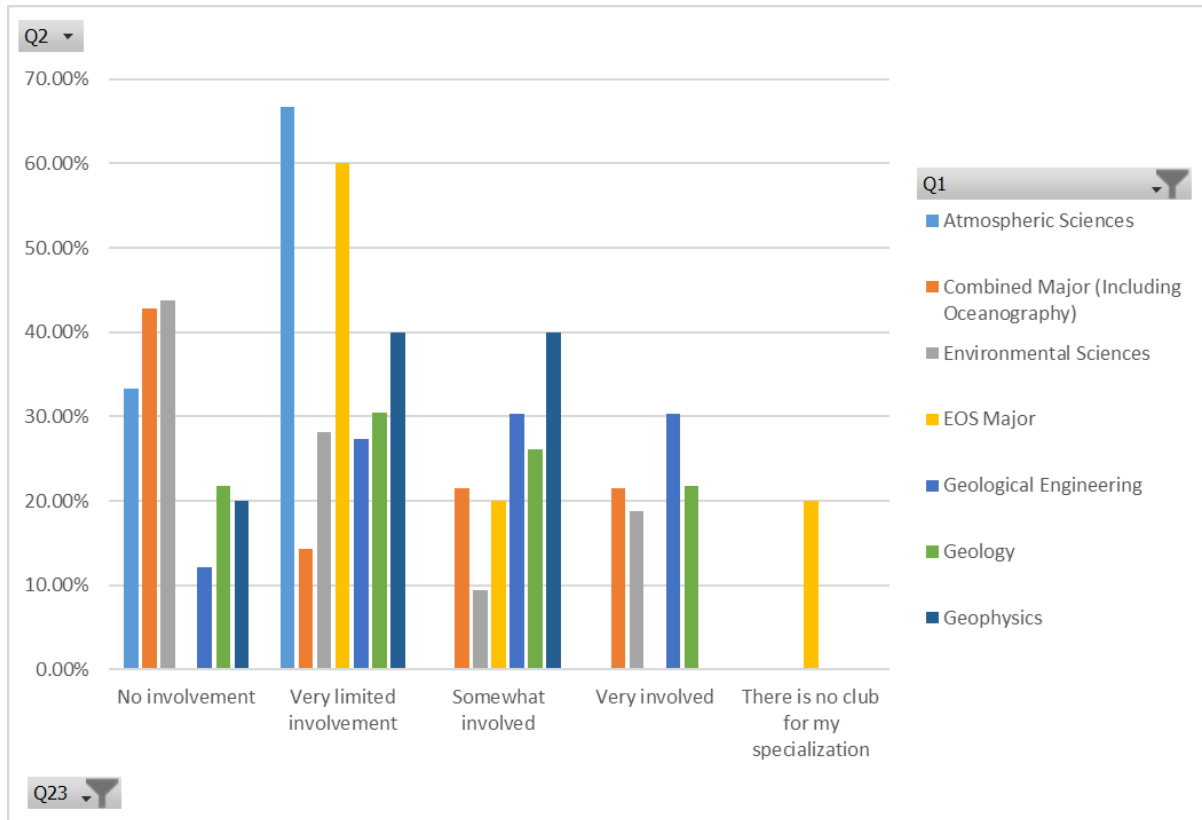


Figure 18. Student responses to the question “How involved are you with EOAS student clubs?”.

Students were largely satisfied with the Undergraduate Commons Room in EOAS, with very few reporting that the space was below adequate (Figure 19). Students also provided specific suggestions on how the student spaces within EOAS could be improved. There was a wide variety of recommendations here, and responses should be reviewed in detail if any significant effort was being dedicated to improving the student spaces in the future. The most common responses centred around the quantity of furniture and equipment in the room, availability of food options and the general need for refurbishment or update of the room. Many students remarked that the room was outdated, messy, disorganized, untidy, uncomfortable, or some combination thereof. Students wanted more tables, cubicles, couches and computers. They also described needing kitchen equipment that worked (including a cold water tap, functional microwave, enough cutlery), eateries that were open after 2:30pm and vending machines that worked and had more available options. A smaller number of students requested after hours access for all undergraduates (many indicated that they didn’t get access until 4th year) and an increase in both social spaces and spaces for silent study.

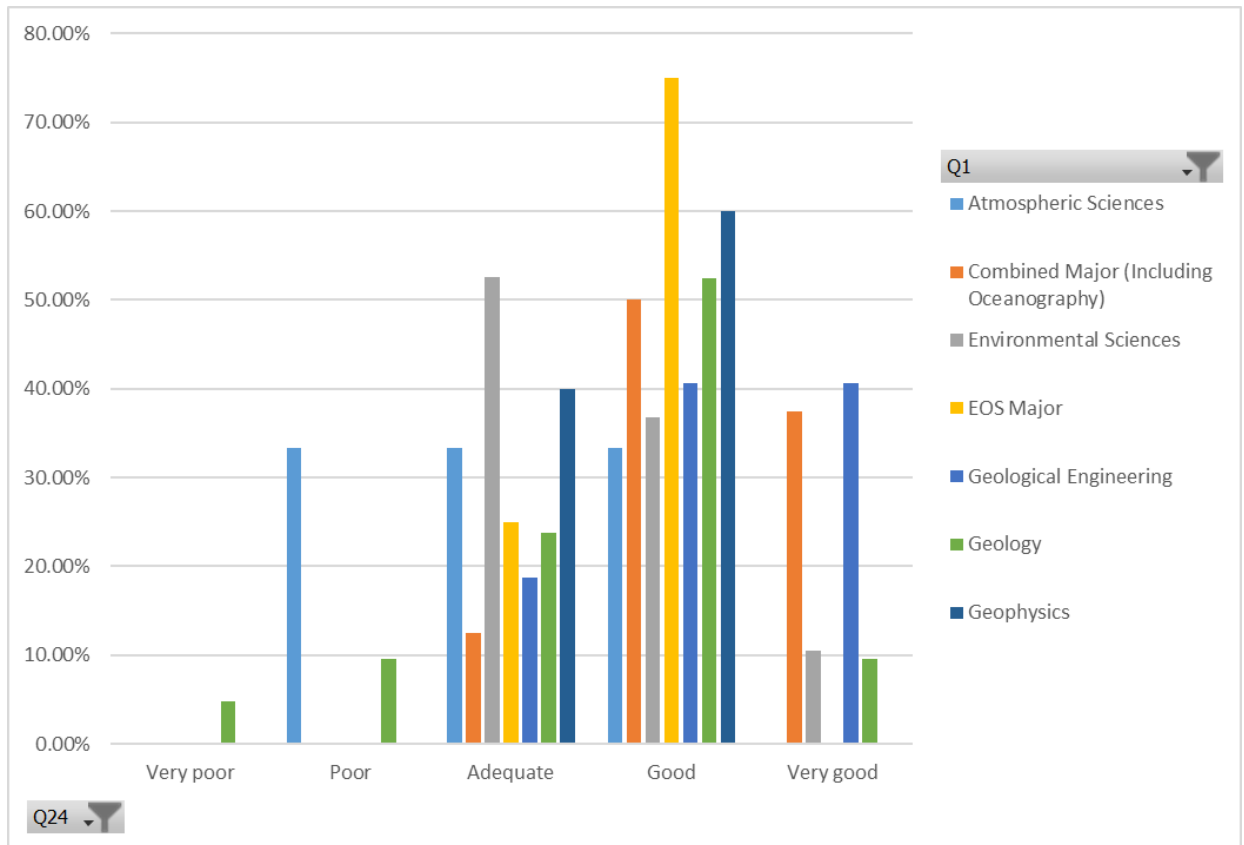


Figure 19. Student responses to the question “How would you rate the Undergraduate Commons Room in EOAS?”.

General Perceptions of the EOAS Learning Experience

Students were asked for more general perceptions and experiences from their time in EOAS. The vast majority of students considered their overall EOAS experience to be “mostly” or “very” positive (Figure 20). When asked the most positive learning experience that they had in EOAS, many students described the enthusiasm and care for students that different EOAS faculty displayed (Figure 21). Many students also mentioned the EOAS courses in general, as well as more specific courses. Other students highlighted interactions with EOAS clubs, getting to know their peers, participating in field trips or courses and interacting with teaching assistants. Students were also asked what they would change about their learning experience in EOAS. The most common comments related to courses, either having less or more flexible course requirements, or having course work that addressed specific interests or specializations more directly (Figure 22). Many students also wanted more field work, more interactions with peers and a stronger sense of community, and more knowledge about future career pathways. Other students wished they had more interaction with faculty, less memorization and more practical course content, greater availability of courses, or wished that they had worked harder or developed personal skills more.

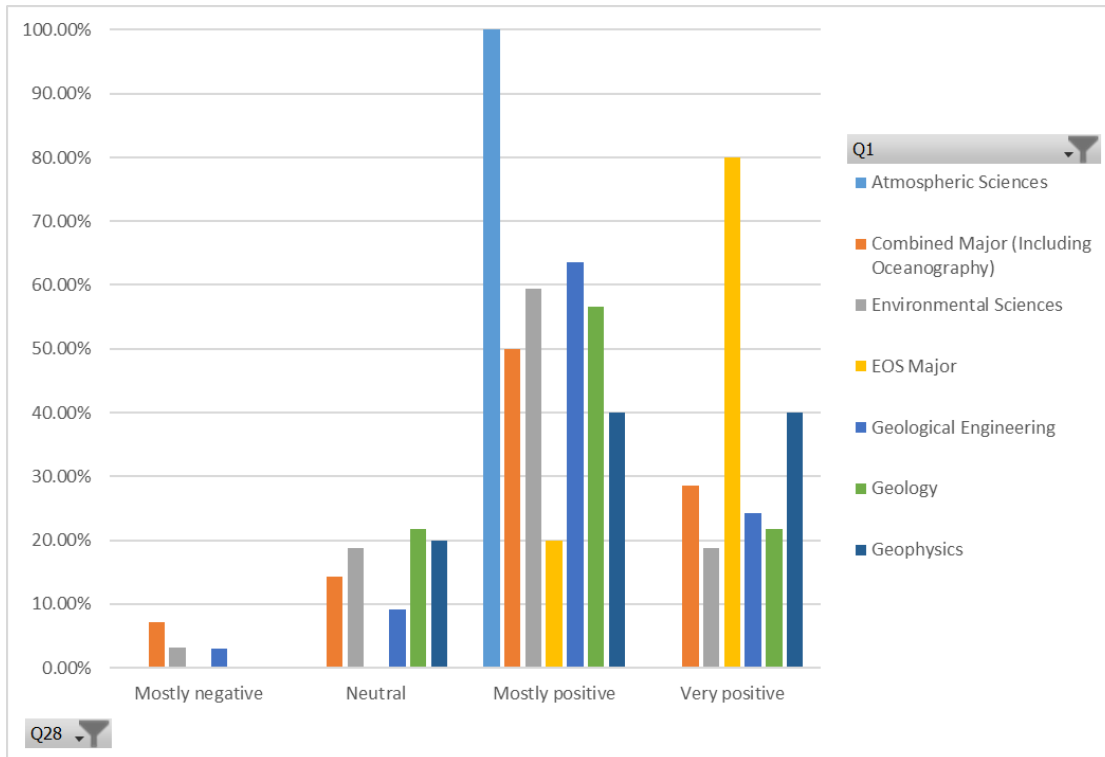


Figure 20. Student responses to the question “In general, how would you characterize your experience studying your chosen specialization at UBC?”. No students from any specialization responded “very negative”, so this option was not included.

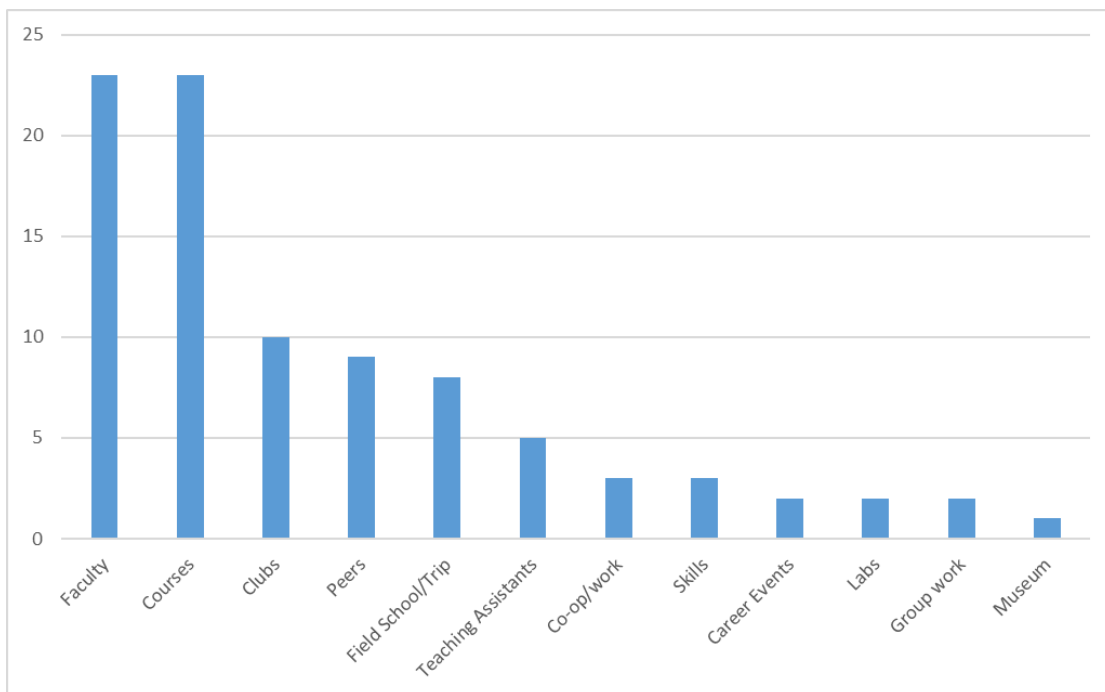


Figure 21. Frequency of student responses to the statement “The most positive learning experience I have had within EOAS is:” (open-ended).

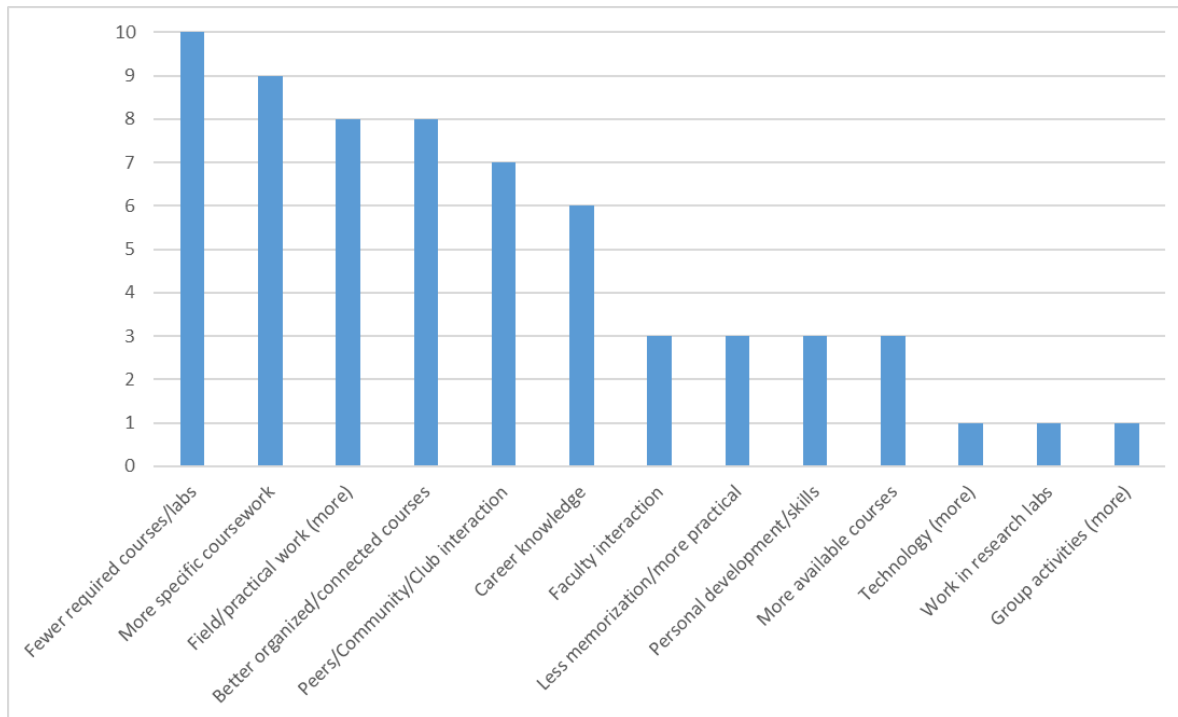


Figure 22. Frequency of student responses to the statement “If I could change one thing about my learning experience in EOAS, it would be:” (open-ended).

Lastly, students were asked if they had any additional suggestions or comments about their specialization in EOAS. Many of these comments repeated themes that emerged on the question asking what students would change about their learning experience (Figure 22). The most common comments (n=6 each) were better scheduling of courses, integrating/adjusting specific topics or courses in specializations, and clearer structure and communication within and between courses. A smaller number of students (n=4) remarked that they would have appreciated earlier advising and career planning so that they could make more informed choices about courses.

Focus Groups

Findings of the focus groups are summarized in relation to each of the themes covered by the survey, for consistency. The focus groups took unique pathways, but covered all of the themes to some degree. Close attention was paid to student career plans, degree pathways, courses and advising, and the EOAS community as sense of belonging, as these emerged as the richest themes from the preliminary analysis of the survey.

Student Choice of Specialization

Choice of specialization was discussed in one of the two focus groups. A geological engineering student noted that they were unaware of their specialization when they first arrived at UBC. They found out about geological engineering through students that they were on a design team with in their first year, and became interested in the importance of understanding the context that you are designing for. They also liked that the program was small and offered clear job opportunities. However, they noted that numbers seem to be dropping in the specialization, and their perception was that more new engineering students are aiming towards electrical and computer engineering. They felt that the department and

specialization will need to market themselves more in order to ensure students were seeing geological engineering as an option, and that the cohort did not become one where it was far from many students' first choice to enrol.

Student Career Plans

Student career plans and prospects were discussed at length in both of the focus groups. Building on the specific career interests and plans of students covered by the survey, the focus groups addressed student access to career information and ability to plan for the future. The preliminary survey analysis suggested that this was a topic of wide interest and critique, primarily in the open-ended comments.

The two geological engineering students highlighted the co-op program in improving their knowledge of career paths after their degrees, by providing access to industry contacts and jobs. They also appreciated industry, alumni, and co-op talks ("Geo Talks") as showing a range of potential opportunities. One noted that the CIVL 411 course centred around case studies, each presented by a different industry professional. This brought real examples of professionals at different career stages to the classroom. Finally, one of the geological engineering students noted that the specialization itself is well linked to the workforce, as the program director and students meet with industry representatives regularly.

In contrast, the geophysics and geology students felt much less informed about their career options. Both felt that there were very few options for connecting with industry on campus and beyond, and that the faculty teaching into their specializations are not as connected to industry as the geological engineering faculty are. The geophysics student noted that although some big companies that hire geophysicists came to campus career fairs, these fairs were not specific to EOAS. Although the geophysics student had gotten a summer internship through attending the Mineral Exploration Round Up Meeting, the geology student felt that if you were not interested in mineral exploration, there wasn't much information out there. There was a strong interest in both students in having more exposure to career options, especially through industry talks. However, the geology student (who had been heavily involved in the undergraduate geology club), felt that they didn't have the base of industry contacts to be able to reach out and organize such sessions. They felt that faculty support was needed to help make contacts that would actually respond to emails and be committed to giving back, because they would know the person that made the original contact.

Degree Pathways, Courses and Advising

Degree pathways, courses and advising were discussed extensively in both focus groups. The students were positive about many aspects of their courses and specializations, whilst identifying specific transition points and barriers that need further attention. All of the students (geology, geological engineering and geophysics) described their courses as practical and applied, involving real world situations. The geology student appreciated that their specialization has had lots of labs that helped contextualize learning outside of the classroom, relating to fieldwork as much as possible.

Both geological engineering students lamented the high numbers of courses and contact hours in their specialization. One student took six courses per semester during their entire degree, including four or five summer courses. The other student noted that third year was particularly difficult, because there were labs every day of the week, greatly increasing the number of contact hours and the potential for conflicts with courses from other departments (e.g., MINE, CIVL, CHBE). They also struggled with the fact

that many of their classmates were not from geological engineering and therefore not taking as high of a course load as those who were from geological engineering. This student described the attitude in engineering as one of “everyone fails together”, but with peers who were not as stretched thin, they had less confidence that everyone was in the same boat as them whilst struggling with the material. This student described an intricate system of prioritization with coursework where more work was put into tasks that seemed like they would have the greatest gains with more time and hard work spent on them. They also described the need to let things go in order to get through, saying they would: “Make it good enough and move on, because I don’t have time to make it perfect and I’ve got a million other things to do at the same time”. The student was still optimistic about their long term career potential, stating that hearing about what benefits will come in an engineering career helped them accept that they were “going to suffer now for a good time later”. This same student felt that the true geological engineering applications and potential weren’t shown until fourth year, and they had trouble persisting through some of the courses that seemed less connected to geological engineering before then.

The geological engineering students also appreciated the program guide that they receive at the start of the year with approved electives. However, one of them experienced many difficulties planning and scheduling courses, as they found conflicts with courses from outside of EOAS, and other courses that just weren’t offered. Both students acknowledged the regular solicitation of student feedback and involvement in curricular discussions in the program, due to the proactive nature of the program director. However, one student was frustrated by feeling like their feedback wasn’t actioned, particularly with respect to what they saw as a “problem course” in their program (EOSC 213). They felt that a more transparent path from feedback to implementation of change would help them understand more clearly the process of change and their role within it.

One geological engineering student noted that their biggest problem with individual courses was when they were disorganized or had an excessively high difficulty level. The geology student recognized that in many of the courses that they took with geological engineering students, it was hard for the instructors to meet the right difficulty level. They felt that the prior training of the students, especially in math and physics, was so disparate between the geological engineering group and students from other specializations that it was easy to leave one group bored, or the other totally overwhelmed. The student suggested providing more review material in these classes, or even just a list of basic math and physics knowledge needed to succeed in them. They did not expect this to take up class time, but rather to be posted on Canvas for students to review where necessary.

Additionally, one transition point in geology was identified that the student felt should be more clearly communicated. In the first semester of second year, geology students have to choose between EOSC 211 or GEOB 270 and 3 additional credits of CPSC/MATH/STAT. The student felt that many students are making this choice uninformed, because they have to register before they really know much about the program (in between first and second year). They suggested that a program guide or welcome email with additional information about potential registration choices should be sent out after students get accepted into geology but before they have to register. They also suggested including EGBC requirements in this program guide, to help inform student choices.

The geophysics student also wanted to have more support for meeting EGBC requirements, as they do not have an approved course list for UBC graduates. The student felt that there hasn’t been a strong rapport between geophysics students and their program advisors, particularly at the lower years. They

described going to upper year students to get “real” solutions to problems. They also noted that advisor sabbatical has negatively affected the student experience, and they were left with the feeling that it was poorly planned.

The EOAS Community and Sense of Belonging

The students universally praised the sense of community in the department, appreciating their small, interdisciplinary and unique specializations. All students described being able to ask other students for help and feeling a strong sense of comradery within their cohorts. Focus group discussions largely addressed the interest in building more community between undergraduates, graduates, faculty and staff in EOAS, as this theme emerged in the survey, particularly in the open-ended responses. All students agreed that though this is a challenging thing to organize and achieve, this would be of benefit to them.

The geophysics and geology students were both very interested in knowing more about what EOAS graduate students do. Both agreed that they get to know graduate students in upper years, when they take more cross-listed courses that graduate students enrol in. However, they would like to know more about them in their lower years. One geological engineering student said that they had seen graduate students in their cross-listed courses, but the other said that they were unsure of who they might be, even if they supposed they were in some of the same courses. Both felt that the graduate community was disperse, and one remarked that it would be helpful for the undergraduate clubs to have a clear point person for the graduate student club to be in touch with.

One geological engineering student suggested having more sports and recreational league teams to build community across the department, as these do not involve alcohol and therefore are not exclusionary in that way. They also suggested hosting cross-disciplinary presentation series with social sessions afterward to strengthen the community. The other geological engineering student, and the geophysics and geology students all spoke highly of experiences they’ve had hearing about departmental research, through professors highlighting their research in class, as well as EOAS poster sessions and lab tours. These students agreed that having open houses at research facilities in the department, or perhaps even one big open research night (including tours of individual labs) would be an appealing way to build community across EOAS. The geophysics student suggested having faculty promote the event in their classes, so that word gets out and people are interested and excited.

Speaking more to the undergraduate community in EOAS, the geology student imagined a world where anyone could walk into the undergraduate room, sit with any pre-existing group and not feel weird about it. This student also noted that it was particularly important to get the second years excited and interested in the community, so that there is onward momentum continuing through their years. They identified early in the year as the most effective time to do this, because people haven’t settled into routines yet. All students mentioned the importance of group work in their classes in building a sense of community, though the geophysics student noted that they didn’t really have much group work in their specialization. One geological engineering student and the geology student both felt that having assigned groups helped them make long lasting friends that they wouldn’t have spoken with otherwise. One of them also noted that although they recognize people in their classes, they often don’t really know them to a level where they feel comfortable asking them if they want to work together. The geological engineering student also described coming back from two years on co-op and not knowing anyone in the specialization anymore, which really made it hard to find group members for projects. As

a recommendation, one student referred to a class where they had three group projects. The first two projects were randomly assigned and the last allowed students to choose their groups. They felt this was a fair and enjoyable way to implement this.

General Perceptions of the EOAS Learning Experience

As much of the focus group discussion focused on specific topics, little time was spent on broad perceptions of the EOAS experience. However, students were asked about positive learning experiences as an introductory, rapport building question, and they were also given the opportunity to share any additional thoughts at the end of the focus group.

All students spoke highly of EOAS and their learning experiences in the department, one saying that they “never feel alone” in such a good community, and another saying that they “always brag about how we all know each other”. The geological engineering students described their professors as approachable and helpful. The geology and geophysics students said that all their professors were knowledgeable and eager to teach. One student felt that their friends in other departments didn’t get asked for feedback as much as EOAS students do, and some don’t even know who they could talk to about concerns.

Discussion

Findings and interpretations are discussed below in relation to each major theme within the study: career plans, career pathways, courses and advising, the EOAS community and sense of belonging and general perceptions of the EOAS learning experience. Survey and focus group results are interpreted in companion to one another, where appropriate.

Student Choice of Specialization

Students in EOAS are largely learning about their programs from the UBC calendar and the EOAS website. Significant attention should be paid to how we are marketing our programs in these places, ensuring that descriptions and images are comprehensive and inclusive. As EOAS looks to build our reputation as a department with many quantitatively-based sciences, this would be a good place to start raising this profile. The exception to this is the geological engineering specialization, which relies more on word of mouth. Therefore, geological engineering may need alternate approaches to marketing, which was corroborated by one of the geological engineering students in the focus groups. This student perceived that numbers were dropping in geological engineering, and in many engineering programs that were not electrical or computer-based. They suggested that a shift to engage this new wave of students may be necessary.

EOAS students choose their majors based on interests and possible career options, and given this, it is perhaps unsurprising that, when considering other majors, they largely considered other majors within EOAS. Biology was the only major that was more commonly considered than EOAS, and given the popularity of biology, it may be worth gaining a better understanding of how we can market to students who are on the fence. Talking to EOAS students who strongly considered biology might help us uncover what factors ultimately led to them choosing EOAS. Students also considered majors in chemistry, physics and astronomy and geography, which highlights potential shared interests between these departments.

Less than 5% of students in what are traditionally considered quantitative disciplines in EOAS (geophysics and geological engineering) were influenced to major by EOAS 100-level courses. Although

part of this is due to geological engineering students being on a standard timetable which does not include EOAS 100-level courses, this points to a potential gap in showcasing the quantitative potential of the department. Over one-third of students in the EOS major, combined majors and geology were influenced by EOAS 100-level courses in their decision to major.

The meet your major event does not seem to be contributing substantially to the decision to major either. This may be because less than 30% of students in most specializations are attending, or because what is presented there is not compelling. Less than 10% of students in most specializations say it had an impact on their decision making. The meet your major event does seem to be slightly more popular for atmospheric science and combined major students, and more influential in the decision making for combined majors. This may speak to the types of people who enrol in these specializations, the programming geared towards them at these events, or some combination.

Student Career Plans

There is a clear difference in career interests and intent to register professionally by specialization, possibly reflecting the more vocational nature of some programs. Geological engineering and atmospheric science students are more likely to be interested in working in related industries and registration than other EOAS students. Geology students have a high interest in professional registration and geophysics students are somewhat interested, though their career interests are broader than those of geological engineering students. Environmental science students have more varied interests in professional registration, as there are several different professional bodies with which they might register. Therefore, student support is more complicated in this specialization than it is for others where there is only one typical body with which they would register.

In the focus groups, this split between the more industry connected geological engineering specialization and the less connected geology and geophysics specializations was apparent. The geological engineering students described a strong link to career paths and the options that they would have, made apparent through case-based coursework, seminar series and the co-op program. The geology and geophysics students felt much less clear on what they could do outside of academia and the mineral exploration industry, and wanted much more information on this, especially earlier in their specializations. Across EOAS, geoscience and environmental science industry work were the most common career plans of students, whereas research work and graduate school were less common. This may be a reflection of the specializations more heavily represented in the survey, or the career information that students are exposed to during their degrees. Regardless, it seems that students are strongly interested in understanding a much greater diversity of options that they may have in their careers. Geological engineering models for career integration will be useful in finding ways to incorporate and communicate this information to students, or at least set them on a path where they know where to look for more information and connections to differing industries.

Lastly, there is considerable uncertainty in how easy students think professional registration will be. Many of these concerns stretch beyond EOAS, e.g., work requirements, ethics exams and grade requirements for competitive societies. However, we can better support students by providing information on professional registration or pointing them to the right authorities earlier on in their degrees. Furthermore, it is important to recognize the burden that is placed on students when their course requirements aren't closely linked to professional registration requirements, and they need to take many extra courses on top of their regular course load. Better information and early planning may

help alleviate this substantially, but there are students who are getting left behind because they either don't have time in their schedule or have reached their maximum credit load.

Degree Pathways, Courses and Advising

On the whole, EOAS students seem happy with the flow of their course pathways. Access to electives is not a pervasive concern, but it is not insignificant. Field courses are most commonly reported as causing graduation delays, with EOAS 428 the most common course cited within this. This speaks to initiatives already underway in the department to both expand the potential class size of EOAS 223, and develop a geological engineering field school. These initiatives are clearly serving student needs, will help expedite graduation and eliminate significant bottlenecks in the specializations. Some students also mentioned upper year and alternate year courses as creating graduation delays, and upper year courses were mentioned as barriers in the focus groups as well.

The heavy course load in geological engineering is a significant concern. Students taking four or five summer courses just to reduce their regular work load to six courses per semester, or accepting that they'll "suffer now for a good time later" is not a sustainable or inclusive solution. Many students need to work during the academic year and/or summer to afford their education, and students suffering through their degrees presents significant mental and emotional barriers to effective learning and well being. There are clear accreditation pressures that enforce this course load, and geological engineering is no exception compared to other engineering programs. However, there may be more we can do to support students in healthy study strategies, stress management, and self-regulation. We may look to initiatives in the Faculty of Applied Science that embed stress and wellbeing material into core courses, or the Teaching and Wellbeing Community of Practice at UBC.

With the exception of geological engineering, there is a clear desire for more information and guidance on degree pathways (i.e., course equivalencies, choices and professional registration). Geological engineering offers a good model for how to provide this information to students, as their program guide was referred to as helpful and effective by focus group students. Providing a program guide or added information to students could also be a means to improve visibility of and access to specialization advisors. Students in focus groups also suggested in class introductions and drop in advising times as alternative means to increase advisor visibility. Finally, the provision of program guides would help alleviate student frustrations with inconsistencies between the UBC calendar and degree navigator, although a digital, interactive visualizer is what many students on the survey stated that they ultimately wanted.

Students widely praised the practical and interdisciplinary nature of their specializations. When asked for more skills that they would like to develop, a clear desire for more computing skills was evident. This included programming, GIS and other software. EOAS has already responded well to this request, by successfully applying for at least one teaching and learning fund to support develop in quantitative and cloud computing based education. As students seem to feel strongly about this, continued student involvement in this project would be beneficial to ensuring it is not only cutting edge and relevant in the eyes of knowledgeable faculty, but in the learners too. Lastly, the desire for more field skills was commonly described. This is well aligned with other department initiatives to update and increase field opportunities for geological engineering and geology. However, it should be noted that these initiatives are as yet not supported financially in the long term, and there are several other specializations in the department which are not being served by these developments.

The EOAS Community and Sense of Belonging

The lower sense of belonging reported on the survey appears in contrast to the high sense of belonging reported in the focus groups; however, it should be noted that three out of four of the focus group participants were from the specializations with the highest reported sense of belonging on the survey (geological engineering and geology). One of the students in the focus groups described an ideal environment where any student could walk into the undergraduate commons room and sit with any pre-existing group and not feel intimidated or weird. Some work needs to be done before students from all specializations feel this way. For example, some students in the survey reported not even knowing that the undergraduate commons room exists. A program guide, as suggested in the previous section, is one way to better communicate this. In addition, there are some simple cosmetic changes to the undergraduate commons room that students in the survey reported wanting to see. As these suggestions were quite diverse, broader consultation would inform this greatly. Some things that stand out as low cost and easy to implement are: more furniture and utensils, functional kitchen items and after hours building access for students at lower years.

EOAS-wide events that include undergraduate students, graduate students, faculty and staff is one suggestion for how to build a sense of departmental community that was brought up many times in open-ended responses to the survey. It was also discussed in the focus groups, where it was clear that some undergraduate clubs don't feel they have the pull or reach to achieve an event like this. Furthermore, survey results indicate that undergraduate club involvement is fairly low across specializations. Some departmental enthusiasm and push might be just what is needed to get this sort of thing over the line. Students in the focus groups provided suggestions for specific EOAS-wide events that they would be keen on: a departmental/research/lab open house or a "meet the profs" night. In both the survey and the focus groups, students noted that was particularly important to engage lower year students in departmental community to help build momentum that carries on throughout the years.

The importance of group projects in building came up in both the survey and the focus group. This is a small change that could go a long way in improving the student experience, especially in specializations where there is very little group work. In the focus groups, students described meeting life long friends in group projects where they were assigned to groups instead of choosing their own. This was particularly important for a student who left UBC for co-op, and returned to not knowing anyone in their specialization. Another student recounted a particularly positive experience in another department where they had three group projects in a class. For the first two, they were randomly assigned two different groups. For the last one, they were able to choose their own group. Another suggestion was to have group projects that intentionally cross specializations, which could be achieved by intentionally selecting groups for the students.

General Perceptions of the EOAS Learning Experience

From both the survey and focus groups, it is clear that the majority of EOAS students have had exceptionally positive learning experiences. Students strongly appreciated their interdisciplinary and practical courses and the enthusiastic and knowledgeable faculty in EOAS that clearly care about their students. The most common things that students would change about their EOAS learning experience include: either less or more flexible required coursework, or coursework that is more specific to topics within their specialization. This is consistent with work with students from underrepresented and marginalized identities in the Faculty of Science at UBC, who felt that depth should be prioritized over

depth in their coursework (Goedhart et al., 2020). Those in the EOAS focus groups spoke about the importance of having their voices heard in EOAS. It is important that we continue to value their feedback and communicate how it is being taken on board.

Limitations and Future Work

Though a reasonable response rate was achieved with the survey (~23%), the lower enrolment specializations (atmospheric sciences, EOS major and geophysics) had less than six students respond. The generalizability of the survey is limited, and even more so with the specializations with a low number of respondents. Future efforts should be dedicated to understanding more about the experiences of these students.

As this investigation covered a broad range of questions and ideas, more work is needed to uncover many of the student perceptions in detail. More directed work may be taken as different departmental questions arise, and this potential work will be strengthened by using the current study as a foundation. Although focus groups were conducted, the survey topics were so varied and extensive that not everything could be covered in an hour. The sample size of the focus groups was also unfortunately low, and did not include second years, or students outside of geological engineering, geology and geophysics. More focus groups, potentially with a more targeted recruitment approach, are recommended in the future.

Conclusions

This investigation covers a vast range of student experiences across specializations in EOAS, and provides insight to the types of interests, pathways and perceptions that our students have. It is a large and complex data set, and one that requires detailed analysis when wanting to dig deeper into some of the specific issues, especially where there are open-ended responses available. Some key conclusions include:

- Students are still largely using the UBC Calendar and EOAS website to learn about their specializations. Geological engineering relies more on word of mouth and may require alternative marketing strategies.
- Those in the more heavily quantitative disciplines in EOAS are not choosing their major because of 100-level courses. Creating a 100-level course that showcases the quantitative links with EOAS may be an opportunity to increase awareness of these disciplines to other students.
- EOAS students are very interested in career pathways, professional registration, and the related choices that they will have to make in course enrolment. However, many of them are not getting enough information on this. Geological engineering offers several examples of how students receive career and specialization information, which could be applied to other specializations.
- Although all students would likely benefit from programming addressing stress management and well being, geological engineering students are in particular need of this, as they report significant challenges with the high course load of the specialization.
- EOAS teaching and learning initiatives to innovate pre-existing and develop new field schools, as well as substantially build out new quantitative and computing education threads are serving

the growing interests of the student population well. They promise to keep EOAS at the cutting edge of science education.

- Sense of community is strong in some programs, but could be improved in others. Students are particularly interested in interaction with graduate students, faculty and staff. Departmental support is needed for the undergraduate clubs to execute events of that scale.
- Students are largely positive about their learning experiences in EOAS. They particularly appreciated their interdisciplinary and practical courses and the enthusiastic and knowledgeable faculty in EOAS that clearly care about their students. They also value their opportunities to provide feedback and shape the future of the department.

This work serves to inform EOAS on many aspects of the student experience. By and large, student experiences are positive, though with considerable room to be enhanced. Continued work of this nature will only further inform the department of how to best target such enhancements, in the best interest of the departmental community.

Works Cited

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Appendices

Appendix 1. Survey questions.

General Questions

The information in this survey is being collected to improve our degree specializations (informally known as your "program"). Data will be kept confidential and will not be used for any other purpose.

The survey should take you **less than 15 minutes** to complete. At the end of the survey, you will have an opportunity to enter in a draw for one of five \$50 UBC Bookstore gift cards by providing a contact email.

Section 1: General questions about you and your choice of degree specialization

1. What EOAS degree specialization are you taking?

- Atmospheric Sciences
- Environmental Sciences
- EOS Major
- Geophysics
- Geology
- Geological Engineering
- Combined Major (Including Oceanography)

2. What is your year standing at UBC?

- 2nd
- 3rd
- 4th

3. Where did you first hear about your chosen specialization?

- UBC calendar
- From students at UBC
- At high school
- Family or friends
- A job you have had
- Other - please specify:

4. Did you consider any other specialization?

- No
- Yes - please specify:

5. Why did you choose your current specialization? Choose all that apply.

- It sounded interesting
- It supports a career path I am considering
- It was/is a placeholder while I decided what I wanted to do
- It was not my first choice, I was placed in it
- Other - please specify:

6. Did any EOSC 100-level courses contribute to your choice of degree pathway?

- No EOSC 100-level courses influenced my choice
- EOSC 100-level courses did influence my choice
- I was on a fixed timetable that did not include any EOSC 100-level courses

6b. If you answered "EOSC 100-level courses did influence my choice", please specify which course(s) specifically influenced your decision to take your current degree. If possible, tell us how they influenced your choice.

7. Did attending the "Meet Your Major" event contribute to your choice of degree pathway?

- I attended this event and it contributed to my choice of major
- I attended this event but it did not contribute to my choice of major
- I did not attend the meet your major event

7b. If you answered "I attended this event and it contributed to my choice of major" or "I attended this event but it did not contribute to my choice of major", please explain your response in more detail.

8. Do you know what career (including graduate school) you want to pursue upon graduation?

- Yes - Something related to my degree (please be as specific as possible):
- Yes - Other (please be as specific as possible):
- No

Broad questions

Section 2: Broad questions about your degree specialization

9. Do you wish to use your degree as a pathway towards professional registration in any of the following?

- P.Geo (Professional Geoscientist)
- P.Eng (Professional Engineer)
- R.P.Bio (Registered Professional Biologist)
- Meteorology
- P.Ag. (Professional Agrologist)
- Other - please specify:
- Not interested in professional registration - PLEASE MOVE TO QUESTION 11

10. Do you think it will be easy or difficult to fulfill all your requirements for your professional registration?

- Very easy
- Somewhat easy
- Somewhat difficult
- Very difficult
- Unsure

11. If you answered "somewhat difficult" or "very difficult" above, please explain why:

12. Courses I have taken feel well connected with others in my specialization representing a sensible flow of knowledge and skills development.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

13. I had no difficulty in finding electives for my degree specialization.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

13b. If you answered "disagree" or "strongly disagree" above, please elaborate below:

14. Are there any specific skills or areas of knowledge you would like to develop during your degree that you think might better prepare you for your career of interest?

15. I have sufficient time to meet the requirements of my degree.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

EOAS experience questions

Section 3: General questions about your experience in EOAS

16. I find it easy to get access to departmental advising.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

17. Do you have any suggestions for access to advising might be improved?

18. My degree requirements are easy to understand.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

19. Do you have any suggestions for what might improve your understanding of your degree requirements?

20. Are there any courses that were (or are) very difficult to register for that delayed (or you think might delay) your graduation? Please list them here:

21. I experienced a strong sense of community (belonging) in EOAS.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

22. How might a sense of departmental community be enhanced in EOAS?

23. How involved are you with EOAS student clubs*?

**Dawson Club (Geology), ESSA (Environmental Science Students' Association), GeoRox Club (Geological Engineering), Oceanography Club, Storm Club (Atmospheric Science)*

- Very involved
- Somewhat involved
- Very limited involvement
- No involvement
- There is no club for my specialization

24. How would you rate the Undergraduate Commons Room in EOAS?

- Very good
- Good
- Adequate
- Poor
- Very poor
- I don't know/I don't use it

25. Are there any additions and/or changes you would like to see to the student spaces within EOAS?

26. The most positive learning experience I have had within EOAS is:

27. If I could change one thing about my learning experience in EOAS, it would be:

28. In general, how would you characterize your experience studying your chosen specialization at UBC?

- Very positive
- Mostly positive
- Neutral
- Mostly negative
- Very negative

29. Are there any other suggestions or comments that you would like to share with us regarding your specialization within EOAS?

Demographic questions

Section 4: General questions about you

30. What was the first language spoken in your household while growing up?

English

Other:

31. How would you rate your ability to read and write in English?

Poor

Fair

Good

Excellent

32. What is your gender identity?

Woman

Non-Binary

Man

33. What is your age?

18-19

20-21

22-23

24-25

26-30

31+

34. I was a transfer student to UBC.

Yes

No

35. To pay for at least part of my education (e.g., tuition, living expenses, etc.), I had to work... (check all that apply)

	Weekdays	Evenings	Weekends
During term	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
During summers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36. If you were employed during the term, how many hours per week did you work on average?

37. I provide some financial support for my children/spouse/family members in addition to going to university.

- Yes
 No

38. What is the longest commute (one way, in km) you had to make regularly (for at least 1 year) while at UBC?

- 0-5 km
 6-10 km
 11-20 km
 21-30 km
 over 30 km

39. If you are willing, please provide your student number. *This is to provide us with generalized background information only that will be aggregated and not associated with any specific person.*

40. Would you be willing to participate in a one hour focus group where we can discuss your experiences in more detail? Pizza will be provided.

- Yes- contact email:
 No

41. If you wish to be entered into the draw for one of five \$50 UBC Bookstore gift cards, please provide an email so we can contact you. Your email will only be used to contact you and will not be associated with any other responses on this survey.

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Appendix 2. Focus group questions.

Note that the focus groups followed a semi-structured protocol, where the questions below were a rough guide to topics of discussion, but the exact phrasing and order of questions was dependent upon the flow of the focus group. Follow up questions were improvised where appropriate.

Introduction

- Thank you all for completing the survey and sitting down for a chat
- Anything you say is confidential. Only a small team of education specialists in EOAS will have access to the recording. Details of the focus groups that are reported broadly will be anonymized.
- Please share your name, specialization and one positive learning experience from your undergraduate degree (so far).

Main questions:

- What are some things that you like about your specialization or courses?
- How can your instructors or EOAS better support you?
- Many of our survey respondents reported considering other specializations both inside and outside of EOAS. Why did you choose your specialization (major)?
- What are some things that were useful for understanding potential career paths in your specialization?
 - What do you wish you had known earlier?
- Many of you said that more events, especially ones that involve undergrads, grads and faculty would be helpful in increasing a sense of community in the department. Do you have any suggestions for specific types of events?
 - How can we better encourage students in lower year levels to come to these events?
 - Can you think of any other ways that we could facilitate more interaction between students and EOAS professors?
- Do you have suggestions other than events for building a sense of community in the department?
- Is there anything else that you would like us to know about your experience as a student, or any additional ideas you have for how we can improve the experience for you and other students like yourself?

Additional questions:

- What have been the biggest challenges or barriers to your success?
- What are some ways that we could make finding electives for your degree specialization easier?
- How could we make it easier for you to complete your degree on time?