

**SENATE QUALITY ASSURANCE AND PLANNING COMMITTEE**  
**Cyclical Review of the undergraduate and graduate programs**  
**in Cognitive Science**  
**Executive Summary and Final Assessment Report**

This Executive Summary and Final Assessment Report of the cyclical review of Carleton's undergraduate and graduate programs in Cognitive Science are provided pursuant to the provincial Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP).

**EXECUTIVE SUMMARY**

The undergraduate and graduate programs in Cognitive Science reside in the Department of Cognitive Science, a unit administered by the Faculty of Arts and Social Sciences.

As a consequence of the review, the programs were categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13-7.2.14).

The External Reviewers' report offered a very positive assessment of the programs. Within the context of this positive assessment, the report nonetheless made a number of recommendations for the continuing enhancement of the programs. These recommendations were productively addressed by the Director of the Department of Cognitive Science and the Dean of the Faculty of Arts and Social Sciences in responses to the External Reviewers' report and Implementation on Plan that was submitted to SQAPC on March 14, 2024.

**Cognitive Science**  
**Unit Response to External Reviewers' Report & Implementation Plan**  
**Programs Being Reviewed: Undergraduate and Graduate Programs**

**Note: This document is forwarded to Senate, the Quality Council and posted on the Vice-Provost's external website.**

**Introduction & General Comments**

Please include any general comments regarding the External Reviewers' Report.

**The Department of Cognitive Science was pleased to receive the Reviewers' extremely positive and encouraging review on June 14, 2023. We have shared the report with faculty and staff and are committed to maintaining and continuing to improve our programs. This document contains both a response to the External Reviewer's Report and an implementation plan (Section B) which have been created in consultation with the Deans.**

For each recommendation **one** of the following responses must be selected:

**Agreed to unconditionally:** used when the unit agrees to and is able to take action on the recommendation without further consultation with any other parties internal or external to the unit.

**Agreed to if additional resources permit:** used when the unit agrees with the recommendation, however, action can only be taken if additional resources are made available. Units must describe the resources needed to implement the recommendation and provide an explanation demonstrating how they plan to obtain those resources. In these cases, discussions with the Deans will normally be required and therefore identified as an action item.

**Agreed to in principle:** used when the unit agrees with the recommendation, however, action is dependent on something other than resources. Units must describe these dependencies and determine what actions, if any, will be taken.

**Not agreed to:** used when the unit does not agree with the recommendation and, therefore will not be taking further action. A rationale must be provided to indicate why the unit does not agree (no action should be associated with this response).

**Calendar Changes**

If any of the action items you intend to implement will result in calendar changes, please describe what those changes will be. To submit a formal calendar change, please do so using the Courseleaf system.

**Hiring**

Where an action item requires additional hiring (faculty or staff) the owner should at minimum include the Dean of the faculty and member of the unit.

## UNIT RESPONSE AND IMPLEMENTATION PLAN

Programs Being Reviewed: Undergraduate and Graduate programs in Cognitive Science

Prepared by Jo-Anne LeFevre, Chair, Cognitive Science, 2023 July 25:

External Reviewer Recommendation & Categorization	Unit Response (choose only one for each recommendation): 1- Agreed to unconditionally 2- Agreed to if additional resources permit (describe resources) 3- Agreed to in principle 4- Not agreed to Rationales are required for categories 2, 3 & 4	Action Item	Owner	Timeline	Will the action described require calendar changes? (Y or N)
<p>(1) The department faces foreseeable retirements that will challenge its capacity to maintain program quality. Considering that fact, the department should develop a prospective succession plan. In crafting that plan, we recommend that the department keep an eye to balancing student-to-faculty ratios across its program concentration areas. It is critical for the Provost's office to support plans for new hires given the small faculty cohort in the Cognitive Science department, and the relatively large proportion of faculty who may retire over the next 3 years. Retirements pose a threat to quality of the department, number of students who can be supervised, depth of expertise, class size, grant dollars, and ability to recruit new students, as well as onboarding opportunities for new faculty, if not addressed. Ideally, the department will engage in hiring those replacement faculty members before those retirements occur to ensure a smooth transition and program maintenance. Specifically, having new hires overlap with senior faculty would allow junior faculty to benefit from mentorship by senior</p>	<p><i>2 – agreed to if additional resources permit</i></p> <p><i>Resources: As indicated in the external reviewers' recommendation, we need to hire three faculty members so that over the next few years, as people retire, our capacity is maintained for teaching, supervision, and research. Moreover, as indicated in the CPR document and in other concerns (see below), faculty are already at capacity for supervisions. We could easily use two additional *new* faculty members to accommodate our current student load. At the graduate level, our course offerings have been quite limited (only required courses offered routinely), which precludes aggressive recruitment). Thus, developing a plan for succession involves hiring faculty members so that the department can both meet our current students' needs and plan for continuing growth.</i></p>	<ol style="list-style-type: none"> <li><i>1. Discuss succession plan at August departmental retreat.</i></li> <li><i>2. Meet with Dean and Provost to determine if there is support for implementing a succession plan.</i></li> </ol>	<p><i>Department, Dean, Provost</i></p>	<p><i>Fall 2023</i></p>	<p><i>N</i></p>

<p>faculty and ensure continuity in recruitment and supervision of undergraduate and graduate students in the face of that transition. <i>Concern</i></p>					
<p>(2) The current two-and-two faculty teaching load competes with time to pursue research. The department should consider a policy for providing teaching release to faculty members who hold a research grant so they can re-invest that time into research (e.g., a 0.5 course release in each year that a grant is held). This is one way that the university can promote and foster a higher quality research-intense profile in the department, its research training programs, and at the university. <i>Opportunity</i></p>	<p><i>2 – agreed to if additional resources permit</i></p> <p><i>Resources: Additional faculty members, as described above. If the 10 faculty members who have external grants received 0.5 course reductions, we would need to have an additional 10 CI positions. Even if that was reasonable, it would have a negative effect on the already limited course offerings. If we hired five new faculty members, that might make this possible, although if they also received grants (highly likely), it still might not be sufficient.</i></p>	<ol style="list-style-type: none"> <li><i>1. Prepare a plan to determine whether the department can arrange courses to accommodate 0.5 course releases for grant holder without compromising course selection.</i></li> <li><i>2. Implementation would depend on whether faculty hires are possible</i></li> </ol>	<p><i>Department, Dean, Provost</i></p>	<p><i>Fall 2023</i></p>	<p><i>N</i></p>
<p>(3) Both undergraduate and graduate students told us that a good deal of information and advice is implicit within the department – available through word of mouth and personal networks. There was a strong interest that the department render that implicit knowledge and advice as explicit in public documents (e.g., website), professional development seminars, and COGS seminar courses. Some examples of hidden implicit knowledge that students would like to be explicitly available include:</p> <ul style="list-style-type: none"> <li>- Skills and procedures for identifying and approaching Honours and Methodology Rotation faculty supervisors;</li> <li>- Explicit “program roadmaps” that articulate options, expectations, course pre-requisite structures, and timelines to help students plan their programs of study;</li> </ul>	<p><i>1 – agreed to unconditionally</i></p>	<ol style="list-style-type: none"> <li><i>1. Refer to graduate and undergraduate committees to enhance information that is available. Some of these resources already exist and perhaps are just not obviously accessible (see #8)</i></li> <li><i>2. Ensure that students are more aware of the tools that Carleton provides for tracking their program progress.</i></li> <li><i>3. Offer one-on-one appointments at less busy times of the year; encourage students to meet with the undergraduate administrator on a regular basis</i></li> <li><i>4. Work with the undergraduate association to offer more workshops and panels to share information about conferences and other professional opportunities</i></li> </ol>	<p><i>Department; Graduate and Undergraduate Committees</i></p>	<p><i>Fall-Winter 2023</i></p>	<p><i>N</i></p>

<ul style="list-style-type: none"> <li>- External conference-related opportunities as well as articulated procedures for securing travel funding to attend those conferences;</li> <li>- More professional development opportunities focused on career and vocational preparation and planning;</li> <li>- Annual and open professional development training opportunities to Identify and submit strong applications to available scholarship opportunities;</li> <li>- Instructions and procedures for seeking co-op opportunities, with a specific clarification regarding if/how a co-op opportunity can be paired with the Honours Thesis stream; and</li> <li>- Centralize information about current opportunities that are available to students for getting involved in faculty research laboratories. <i>Concern</i></li> </ul>		<p><i>that may otherwise not be communicated widely.</i></p>			
<p>(4) The program structure serves most needs and wants, but there is a sense that the program could be better organized if core courses that are delivered at earlier stages of the program could include a focus on integrating knowledge that is presented in the courses that are provided by other departments so that students are more fully immersed in a Cognitive Science perspective. <i>Opportunity</i></p>	<p><i>1 – agreed to unconditionally</i></p>	<ol style="list-style-type: none"> <li><i>1. This is the goal of the 2<sup>nd</sup> and many 3<sup>rd</sup> year courses. However, it may not have been stated clearly enough.</i></li> <li><i>2. Discuss with faculty who teach these courses.</i></li> <li><i>3. Provide more explicit direction to contract instructors who are often teaching these courses.</i></li> </ol>	<p><i>Department; Undergraduate Committee</i></p>	<p><i>Fall 2023</i></p>	<p><i>N</i></p>
<p>(5) Students were grateful for funding provided by the program but noted that funding is increasingly stretched relative to cost of living. We recommend that the program and university find new and/or additional ways to provide students with funding that allows them to focus on their studies without</p>	<p><i>2 – agreed to if additional resources permit</i> <i>Resources: more funding for graduate students through departmental scholarships. More funding for international students.</i></p>	<ol style="list-style-type: none"> <li><i>1. We already offer support for preparing Tri-Council scholarships (each year in the Fall) and have had reasonable success but there are limits to the availability of those funds.</i></li> </ol>	<p><i>Department, FGPA</i></p>	<p><i>2023-24</i></p>	<p><i>N</i></p>

<p>needing to pursue external work to afford their program fees. We appreciate that might be difficult to accomplish internally, but the department could invest time in collating funding sources and offering intense mentorship to students for seeking external funding from traditional (e.g., Tri-agency, OGS) and less-traditional sources (e.g., industry sources). The department should conduct a similar exercise to find alternative funding and financial supports for international graduate students to offset restrictions with respect to provincial and federal awards, hours permitted to work, and allocation of TA positions. <i>Concern</i></p>		<p>2. <i>Considerable efforts are expended by the department to make available to students as much information about other sources of funding as possible. Supervisors have been creative about this and students whose supervisors have research grants typically receive RAships.</i></p> <p>3. <i>Discuss situation with FGPA given the restrictions on funding for international students.</i></p>			
<p>(6) Students did not report that course offerings matched their interests and expectations, but they did note that some departments associated with a concentration area were unable to fit them into their courses (e.g., Department of Psychology). (a) The department should seek to negotiate space for its students in those partner courses and, if unable to do so, consider offering its own courses on those topics (instead of student specific directed-studies courses on a case-by-case basis) to ensure students can proceed in their program and that teaching resources are used efficiently in those cases. (b) This same exercise should be applied to the rate at which courses are made available to students to ensure a shortest delay between the need for learning a topic or method that is relevant to their research programs. Finally, we heard that students appreciate a mixture of in person and online course offerings and we recommend the department continue to offer</p>	<p><i>4 – not agreed to because this concern is not true (i.e., whatever the reviewers were told is incorrect). Individual students might have wanted to get into courses that are not required in their concentration, but that is outside our control and a preference, not a requirement. All required courses are available as needed (see more details below). Therefore, there is no action to be taken because these concerns are either wrong, or perhaps refer to a very specific situation for an individual student. If the reviewers could explain and provide more details about which courses were not available and under what condition, that might help to clarify possible concerns.</i></p> <p><i>(a) We DO collaborate with the Psychology department and they DO let students into any of the courses that are REQUIRED for their concentrations. Psychology is not obligated to admit students to courses</i></p>				

<p>those options to accommodate students differing constraints and life circumstances. <i>Concern</i></p>	<p><i>which are NOT required in their program specifications, however, nor is any other department. I assume that this is the source of this concern. Psychology has very full courses at the 3<sup>rd</sup> and 4<sup>th</sup> year level. At the graduate level, we would certainly like it if Psychology would allow our students to take graduate courses if they have the prerequisites and sometimes that is possible, but not for statistics courses. Without more details about this concern, there is really no action needed.</i></p> <p><i>(b) All courses that are required in the UG program are offered twice each year (Fall and Winter), and all students who require those courses to graduate are accommodated. So again, we do not really know what the concern being expressed is. Students are encouraged to take courses in the recommended sequence (e.g., CGSC 1005 in first or second year, because it is a prerequisite for CGSC 3601 in 3<sup>rd</sup> year). At the graduate level, required courses are either offered every year (Masters) or offered every 2<sup>nd</sup> year (Ph.D.).</i></p>				
<p>(7) We heard that space has improved for the department; however, we also heard about some ongoing challenges. It would be better if laboratories and offices were in the same building, though the campus tour showed that is not feasible. We learned that the 22<sup>nd</sup> floor in Dunton Tower where offices are located is split for other purposes and that offices occupied by non-</p>	<p><i>1 – agreed to unconditionally</i></p>	<p><i>1. We just found out that by mid-August we will have access to the whole of the 22<sup>nd</sup> floor of DT, solving the office problem for now.</i></p> <p><i>2. The lab space will remain in VSIM.</i></p>	<p><i>No action required.</i></p>		

<p>department members on that floor will (if maintained as such) displace department members to other locations. We recommend that the university allocate priority of office space on the 22<sup>nd</sup> floor of Dunton Tower to faculty, students, and staff in the Department of Cognitive Science. We also heard that administrative staff have been displaced from their offices in the past. The issue poses a challenge to morale within the unit and we recommend that the university be judicious in its assignment of space to ensure the department has a centralized and stable physical location. One of the things we heard over the site visit was that the department has a very positive culture. Attending to space and ensuring a shared home will ensure that program's culture is maintained to the department's benefit in particular and to the university's benefit in general. <i>Concern</i></p>					
<p>(8) We heard that the departmental website is a first stop location for students, faculty, administrative staff, and recruitment efforts. Yet, insufficient resources are available to develop and maintain that webpage in proportion to its importance. We recommend dedicating resources (and any requisite training required) to the development and maintenance of the department webpage to render implicit departmental knowledge as explicit and to serve as an up-to-date central hub for department information including, but not limited to, funding opportunities, faculty availability, co-op opportunities, upcoming program deadlines, upcoming professional development opportunities, student support services, program</p>	<p><i>2 – agreed to if additional resources permit</i> <i>Resources: Funding for staff support for developing and maintaining the department website. The three current staff members are busy with their current responsibilities. One does take responsibility for the website but has very little time to develop it, so the focus is on maintenance, and we agree it is unsatisfactory. Given the importance of social media, event planning, and general communication, including websites, we think it is imperative that the university provide people to do the work. It is not useful to have students work on websites; they don't have the knowledge of the department or the program, and then they graduate. We know that at least</i></p>	<ol style="list-style-type: none"> <li><i>1. Discuss how website upgrading and maintenance can be funded; current administrative staff do their best, but they are very busy.</i></li> <li><i>2. Find out more about how other departments manage this important task.</i></li> </ol>	<p><i>Department; Dean</i></p>	<p><i>2023-24</i></p>	<p><i>N</i></p>



<p>forms, news, and recognitions of success. <i>Opportunity</i></p>	<p><i>two other departments in FASS have staff whose responsibilities are primarily in this general area.</i></p>				
<p>(9) Provide a solution with respect to the faculty member who has been on leave/part-time, and the faculty member who has been on a continuing series of 1-year contracts. The situation is putting the department at a deficit with respect to supervision of graduate and undergraduate students and poses an ongoing challenge to program quality. <i>Concern</i></p>	<p><i>2 – agreed to if additional resources permit</i>  <i>Since this concern was raised, the faculty member who was on leave has reached a settlement with the university. We have not yet received a replacement position although one was requested. If that happens, we would hire the faculty member who did 5 years of one-year contracts.</i></p>	<p><i>1. Continue to discuss the situation with the Dean and Provost (see also #1, #10).</i></p>	<p><i>Department, Dean, Provost</i></p>	<p><i>??</i></p>	<p><i>N</i></p>
<p>(10) Create and advertise more research-study opportunities in department laboratories. Undergraduate students were positive about the co-op program but noted that co-op work was not always directly related to their program of study. They expressed an interest in working in department laboratories where they would gain work-related experience that was more directly related to Cognitive Science. <i>Opportunity</i></p>	<p><i>2 – agreed to if additional resources permit</i>  <i>Resources needed: Additional faculty members to provide additional supervision opportunities. Those faculty members who routinely have positions in their labs cannot accommodate more students; perhaps more worryingly, two of them are within a few years of retirement (e.g., see Concern #1). As shown in Table D1.2, seven faculty members (Herdman, LeFevre, Anderson, Jouravlev, Muldner, Davies, and West) each have 5-11 thesis supervisions (median 7.0); these numbers do not count volunteers, co-op students, independent studies, so the actual number per lab is probably over 10. Faculty try to accommodate as many students as possible in as many ways as possible, but there is a limit. When two of these faculty retire, the capacity will go down quite a lot.</i></p>	<p><i>1. Discuss at departmental retreat. The ability to implement depends on the grant funding of faculty members, who are typically using their grants to fund graduate students.</i>  <i>2. Useful if the faculty would have some kind of matching funds available because funding a co-op student (full time work for a term) is typically beyond the budget for the average grant holder. Concretely, more USRA positions would also be helpful – FASS has only 3 for Psychology, Cognitive Science, and Geography. We used to have 8-10 before a rebalancing.</i></p>	<p><i>Department</i></p>	<p><i>August</i></p>	<p><i>N</i></p>

<p>(11) Develop a strategy to track career paths of students who completed the program and use that information to provide current students with professional development opportunities that feature former students who can describe their career paths and how the program prepared them for that path. The aim would be to give students who are currently in the program a prospective awareness to plan their program of study in relation to the career paths that are available to them. <i>Opportunity</i></p>	<p><i>2 – agreed to if additional resources permit</i></p> <p><i>Resources: As noted for Concern #8, this type of data collection and maintenance needs someone (staff) to provide continuity.</i></p>	<p><i>1. Along with the website, this kind of initiative requires some kind of permanent solution because otherwise it happens for a while and then falls apart. Discuss with the Dean about the possibility of support (through a shared staff position, perhaps?) for these initiatives (#8)</i></p>	<p><i>Department, Dean</i></p>	<p><i>2023-2024</i></p>	<p><i>N</i></p>
<p>(12) We learned that the program will introduce an AI concentration and focus in the coming year. This represents a good academic opportunity and should attract students. However, we recommend that the program make deliberate and early efforts to make connections within the technology sector and strategize program delivery relative to vocational and career expectations of students within that domain. Providing a direct path from academic interest to alt-academic and applied career routes has strong potential for success and growth. <i>Opportunity</i></p>	<p><i>2 – agreed to if additional resources permit</i></p> <p><i>Resources: Faculty members to provide links to industry (only a few currently have the resources to maintain such links); staff to manage the growth.</i></p>	<p><i>1. Because there are relatively few faculty members, the current ones are already quite busy. Our co-op/experiential learning coordinator is full tasked. Is it possible we could solve this, #11, and #8 with one solution?</i></p>	<p><i>Dean</i></p>	<p><i>2023-2024</i></p>	<p><i>N</i></p>
<p>(13) The program’s success and rate of growth over the past several years must be a welcome outcome for FASS and the University. However, the workload in the now heavy student-to-faculty ratio in the program has increased as a corollary. We recommend that the faculty and university be strategic about how the Department and its programs are resourced going forward to promote or at least maintain those gains. Without a strategy of that sort (particularly with foreseeable upcoming retirements), there is potential for the program’s success to overwhelm its resources and</p>	<p><i>2 – agreed to if additional resources permit</i></p> <p><i>Resources: Hire five new faculty members, as outlined above, three to accommodate retirements, one to replace the faculty member who left, and one to enhance specific target areas related to AI, technology, and learning.</i></p>	<p><i>1. Department can discuss plans (see also #1, this seems like a related issue), #9, #10, but there is little we can do without additional resources, especially once senior faculty start to retire.</i></p>	<p><i>Department, Dean, Provost</i></p>	<p><i>??</i></p>	<p><i>N</i></p>

for the faculty and university to lose what FASS told is its second best enrolled program. <i>Concern</i>					
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