Carleton University

Office of the Vice-Provost (Academic and Global Learning)

memorandum

DATE: April 16, 2026

TO: Senate

FROM: Dr. David J. Hornsby, Vice-Provost (Academic and Global Learning), and Chair, Senate Quality Assurance and Planning Committee

RE: Final Assessment Report and Executive Summary: Undergraduate Programs in Computer Science

---

The purpose of this memorandum is to request that Senate approve the Final Assessment Report and Executive Summary arising from cyclical program review of the undergraduate programs in Computer Science.

The request to Senate is based on the recommendation from the Senate Quality Assurance and Planning Committee (SQAPC), which passed the following motion at its meeting of March 26, 2026:

THAT SQAPC recommends to Senate the approval of the Final Assessment Report and Executive Summary arising from the Cyclical Program Review of the undergraduate programs in Computer Science.

The Final Assessment Report and Executive Summary is provided pursuant to article 5.4.1. of the provincial Quality Assurance Framework and article 7.2.24 of Carleton's Institutional Quality Assurance Process (IQAP). Article 7.2.24.3 of Carleton's IQAP (passed by Senate in November 2021 and ratified by the Ontario Universities Council on Quality Assurance in April 2022) stipulates that, in approving Final Assessment Report and Executive Summary 'the role of SQAPC and Senate is to ensure that due process has been followed and that the conclusions and recommendations contained in the Final Assessment Report and Executive Summary are reasonable in terms of the documentation on which they are based.'

In making their recommendations to Senate and fulfilling their responsibilities under the IQAP, members of SQAPC were provided with all the appendices listed on page 2 of the Final Assessment Report and Executive Summary. These appendices constitute the basis for reviewing the process that was followed and assessing the appropriateness of the outcomes.

These appendices are not therefore included with the documentation for Senate. They can, however, be made available to Senators should they so wish.

Any major modifications described in the Implementation Plans, contained within the Final Assessment Reports, are subject to approval by the Senate Committee on Curriculum, Admission, and Studies Policy, the Senate Quality Assurance and Planning Committee (SQAPC) and Senate as outlined in articles 7.4.1 and 5.1 of Carleton's IQAP.

Once approved by Senate, the Final Assessment Report, Executive Summary and Implementation Plan will be forwarded to the Ontario Universities' Council on Quality Assurance and reported to Carleton's Board of Governors for information. The Executive Summary and Implementation Plan will be posted on the website of Carleton University's Office of Academic Programs and Strategic Initiatives, as required by the provincial Quality Assurance Framework and Carleton's IQAP.

THAT Senate approve the Final Assessment Report and Executive Summary arising from the Cyclical Program Review of the Undergraduate Programs in Computer Science.

SENATE QUALITY ASSURANCE AND PLANNING COMMITTEE
Cyclical Review of the undergraduate programs
In Computer Science
Executive Summary and Final Assessment Report

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

EXECUTIVE SUMMARY

The undergraduate programs in Computer Science reside in the School of Computer Science, a unit administered by the Faculty of Science.

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 School of Computer Science and the Dean of the Faculty of Science in responses to the External Reviewers' report and Implementation on Plan that was submitted to SQAPC on March 26th, 2026.

FINAL ASSESSMENT REPORT

Introduction

The undergraduate programs in School of Computer Science reside in the School of Computer Science, a unit administered by the Faculty of Science. This review was conducted pursuant to the Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP). 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 7.2.13-14).

The site visit, which took place on February 4th, 2025, was conducted by Dr. Minas Spetsakis from York University, and Dr. Marc Frappier from University of Sherbrooke. The site visit involved formal meetings with the Vice-Provost (Academic and Global Learning), the Associate Vice-President (Academic Programs and Strategic Initiatives), the Dean of the Faculty of Science and the Director of the School of Computer Science. The review committee also met with faculty members, staff, and undergraduate students.

The External Reviewers' report, submitted on April 28th, 2025 offered a very positive assessment of the program.

This Final Assessment Report provides a summary of:

- Strengths of the programs
- Challenges faced by the programs
- Opportunities for program improvement and enhancement
- The Outcome of the Review
- The Implementation Plan

This report draws on five documents:

- The Self-study developed by members of the School of Computer Science (Appendix A)
- The Report of the External Review Committee (Appendix B).
- The response and implementation plan from the School of Computer Science (Appendix C)
- The Response from the Dean of the Faculty of Science (Appendix D).
- The internal discussant's recommendation report (Appendix E).

Appendix F contains brief biographies of the members of the External Review Committee.

This Final Assessment Report contains the Implementation Plan (Appendix C) developed by the Director of the School of Computer Science and agreed to by the Dean of the Faculty of Science for the implementation of recommendations for program enhancement identified as part of the cyclical program review process.

The Implementation Plan identifies who is responsible for implementing the agreed upon recommendations, as well as the timelines for implementation and reporting.

Strengths of the programs

General

The External Reviewers' Report states that "[t]he program is indeed consistent with the institution's mission. Its remarkable success in terms of cohort sizes and its reputation among industry and academia is a tangible proof of its quality" (p.2).

Faculty

Speaking with regard to faculty, the external reviewers' stated:

"The CV provided for faculties show a high level of quality. The program has a considerable number of researchers that provide the backbone for the program, enough to support project courses, undergraduate summer research, recruitment to the graduate programs, etc." (p. 3).

Curriculum

The external reviewers noted that the "program has good reputation outside Ottawa, and good reputation among their students and within industry. The School pay particular attention in engaging their students by providing space for socialization, support for clubs, etc." (p.5).

Opportunities for program improvement and enhancement

The External Reviewers' Report made 11 recommendations for improvement:

1. Re-instate the minor.
2. Explore double major.
3. Find TAs and Increase TA recruitment pool.
4. Simplify the rules about the streams, switching between programs.
5. Expand the coop/internship program by exploiting the rich high-tech environment of the Ottawa region and Ontario.
6. Expand the core to meet the ACM curriculum requirements.
7. Encourage persons to attend classes and tutorials in person.
8. Tackle academic honesty in the presence of new technologies.
9. Strengthen academic advisor and give them the flexibility to adjust their duties with students needs.
10. Expand summer offerings to allow students to graduate earlier.
11. Offer service courses to other departments.

The Outcome of the Review

As a consequence of the review, the undergraduate programs in the School of Computer Science were categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of **GOOD QUALITY** (Carleton's IQAP 7.2.13-14).

The Implementation Plan

The recommendations that were put forward as a result of the review process were productively addressed by the Director of the School of Computer Science and the Dean of the Faculty of Science in responses to the External Reviewers' report and Implementation Plan that was considered by SQAPC on March 26th, 2026. The School of the Computer Science agreed unconditionally to recommendations #8 and #9, and agreed in principle to recommendations #2, #4, #5, and #6. They also agreed to recommendations #1 #3, #10, and #11 while noting that additional resources could help facilitate these recommendations. The unit did not agree to recommendations #7, but provided adequate rationale for their response.

It is to be noted that Carleton's IQAP provides for the monitoring of implementation plans. A monitoring report is to be submitted by the academic units and Faculty Dean and forwarded to SQAPC for its review by June 30, 2028.

The Next Cyclical Review

The next cyclical review of the undergraduate programs in Computer Science will be conducted during the 2030-31 academic year.

Computer Science
Unit Response to External Reviewers' Report & Implementation Plan
Programs Being Reviewed: Undergraduate 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. You may also highlight anything noteworthy which you would like included as part of your final assessment report and executive summary.

The School of Computer Science was pleased to receive the Reviewers' very positive External Reviewers' report on May 1st, 2025. The External Reviewers' report dated May 1st, 2025, was distributed to our faculty and staff. We are dedicated to ongoing enhancement of our programs to improve experiences for students, staff, and faculty. This document includes both our response to the External Reviewers' Report and an Implementation Plan (see Section B), both of which were developed in collaboration with the Dean.

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: Bachelor of Computer Science B.C.S. Honors / Bachelor of Computer Science B.C.S. Major

Prepared by (name/position/unit/date):

Michel Barbeau (Director), Jean-Pierre Corriveau (Graduate Director), Jason Hinek (Associate Director), and Mark Lanthier (Associate Director)

School of Computer Science

February 17, 2026

External Reviewer Recommendation & Categorization Note: Recommendations highlighted in yellow were also made as part of a previous review	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)
1) *Re-instate the minor* ***Opportunity***	*Agreed to if additional resources permit*	*New course sections may need to be created. Re-instating the minor is dependent on overall enrolment in the major and whether the expected increase in the number of students to teach can be handled within the workload of current faculty and TA complement.*	*Director and Dean*	*Ongoing*	*N*
2) *Explore double major* ***Opportunity***	*Agreed to in principle*	*The demand for a double major, i.e., possible number of students, will be investigated. Double majors will be created if there is a real demand from the students. Such creation is also dependent on overall enrolment in the major and whether the expected increase in the number of students to teach can be handled within*	*Director, Dean, and curriculum committee*	*Ongoing*	*Y*

		the workload of current faculty and TA complement.			
3) Find TAs and Increase TA recruitment pool ***Concern***	*Agreed to if additional resources permit.* *Undergraduate TA recruitment is not an issue in SCS, and the use of guaranteed TAships for graduate students (also known as Priority TAships) is discussed in the next column.* *In the discussion about this with the reviewers, it was argued that graduate Priority TAs offer the advantage of being a resource for several offerings of a course.*	*The allocation of the total number of (Priority and Outside Priority) TAships, provided by the Office of the Dean of Science to SCS, is determined through undergraduate teaching needs, while taking into account previous allotments (so as to mitigate yearly fluctuations) as well as graduate supervision capacity. SCS determines the breakdown of the Priority TA allocation between Master's and PhD applicants, as well as domestic and international ones, aiming to optimize both suitability to perform the TA duties and graduate recruitment efforts. SCS will continue to work with the Office of the Dean of Science to ensure the best use of TA funding.*	*Director and Dean*	*Ongoing*	*N*
4) Simplify the rules about the streams, switching between programs ***Opportunity***	*Agreed to in principle*	*The possibility of simplifying switching between streams will be explored in the context of SCS addressing recommendation 6. The uniform treatment of streams across programs may complicate this goal.* *Note that starting Fall 2025, stream specific first year requirements are removed, which simplifies stream switching. Furthermore, new students now pick their stream only once they are in their*	*Curriculum committee, School Council, and Computer Science Faculty Board*	*2025-26 Academic Year*	*Y*

		1st year. This further simplifies stream switching.			
5) *Expand the coop/internship program by exploiting the rich high-tech environment of the Ottawa region and Ontario* ***Opportunity***	*Agreed to in principle*	*The expansion of our co-op program depends on the co-op office and the financial 'health' of the high-tech environment (which is cyclical). In particular, it is the responsibility of the co-op office to organize centralized advertisement to potential employers and organize interviews.*	*Carleton's co-op office*	*Ongoing*	*N*
6) *Expand the core to meet the ACM curriculum requirements* ***Weakness***	*Agreed to in principle*	*Our B.C.S. Honours of 20 credits has 4 credits of free electives and 5 credits of Breadth electives, as well as 0.5 credit in COMP at level 2000 or above and up to 2 credits in COMP at level 4000. The School dropped the CIPS accreditation in 2016. We continued to use the CIPS curriculum as a guide for our program's development, but we deemed the accreditation itself not worth the trouble. It is almost completely unknown to students and industry. Most of the approximately 100 undergraduate CS programs in Canada do not have it. (More precisely, a total of only 11 do have CIPS accreditation.)*	*Curriculum committee, School Council, and Computer Science Faculty Board*	*Ongoing*	*Y*

7) *Encourage persons to attend classes and tutorials in person* ***Concern***	*Not agreed to*	*We have tried many things to encourage in person attendance, including mandatory attendance strategies. We have had large empty classrooms in many courses. We must face this well-known reality. It is difficult to motivate students to attend classes when everything is available online.* *Moreover, students like the flexibility of online resources.* *Online courses can allow for interactions with the instructors. The issue is whether to have them recorded (as a safety net for the many who register but do not attend).* *As for tutorials, they need to be rethought as self-correcting walkthroughs: we simply cannot afford to pay TA hours for ill-attended tutorials.* *A few classes may need to be compulsory attendance lab-based ones.* *Our faculty has tried to encourage in-person attendance in numerous ways, and will continue to do so. However, this is a not a problem particular to our program and there are no known solutions we can just agree to implement. We will continue to view this as a critical issue but cannot at this time commit to any particular actions beyond what we are currently doing.*	*None*	*None*	*N*

8) *Tackle academic honesty in the presence of new technologies* ***Concern***	*Agreed to unconditionally*	*Course outlines are now required to state the policy of the instructor with respect to AI technologies.* *The use of tools such as CoMaS to mitigate the documented high risk of plagiarism during online tests and exams worked well for several instructors, but this needs to be studied further. Some students encounter installation and running issues.* *Question generators, so that students all receive unique (yet similar) exams, have been used and can be further developed.* *At the school's council of February 13th, a motion was presented to require that, in order to guarantee equity across the sections of a course, all sections of a same course offered the same term share a common outline and a common evaluation scheme (as is already done in Math). From the unit's viewpoint, equity demands that academic integrity not be a matter left for individual instructor to address. Then, shortly after this meeting, the director will form a "policy committee" that will own the responsibility of addressing how to tackle, within the framework defined at the university level, academic honesty in the presence of new technologies. This committee will make recommendations to be voted by early May. These recommendations will pertain to course 'ownership', the use of online exams, the weight of assignments and other unsupervised activities in the final grade,*	*SCS faculty members*	*2026-27 Academic Year*	*N*

		exams that are tightly tied to assignments (so that the latter are done regardless of their weight in the final grade), etc. Once shared outlines are developed for Fall 2026, we will take Fall 2026 and Winter 2027 to develop 'AI-resistant' assignments and exams, emphasizing auto-correction as much as possible. We aim at Fall 2028 to deploy this work.			
9) *Strengthen academic advisor and give them the flexibility to adjust their duties with students needs* ***Concern***	*Agreed to unconditionally*	*The operational needs of the unit in terms of undergraduate academic advisors are dependent of the overall enrolment in the major. Recently, a third undergraduate advisor has been added.* *In order to review the role and tasks of our three undergrad advisors, Office of Quality Initiatives will be conducting a departmental review over a period of several weeks in February and March. Their analysis should provide useful feedback on our practices and staffing needs.*	*Director*	*Now*	*N*
10) *Expand summer offerings to allow students to graduate earlier* ***Opportunity***	*Agreed to if additional resources permit*	*Offering courses during the summer is mainly dependent on the availability of instructors and TAs.*	*Director and Dean*	*Ongoing*	*N*
11) *Offer service courses to other departments* ***Opportunity***	*Agreed to if additional resources permit*	*New courses are not required but rather new sections of existing courses may need to be created. This is dependent on overall enrolment in the major and whether the expected increase in the number of students to teach can be handled within the workload of current faculty and TA*	*Director and Dean*	*Ongoing*	*N*

		complement. However, we believe that recommendations 1 and 2 should be prioritized. *First, in the case of online courses, one in theory does not need multiple sections and can host a single huge audience. Pedagogically, however, it is well understood that student engagement in online courses is inversely proportional to class size. Online sections in SCS courses vary in size, some reaching over 200 students. This is no desirable and we aim at online sections of 100 students or less ideally (which is seldom achieved). This explains the need for multiple sections in several of our online courses.* *Second, in the case of in-person courses, the need for multiple sections is dictated by the availability of rooms that can handle the registered number of students (as opposed to the actual number of students who attend). In other words, we do not have the right to oversubscribe sections based on an expected attendance rate. Clearly, in-person activities that engage students (including exams) require rooms that must safely accommodate the total number of students registered in a section. Thus, reducing the number of sections of an in-person course is ill-advised given the probable unavailability of larger rooms and the reduction of genuine student interaction as class size grows.*			