UNIVERSITY of GUELPH

OFFICE of THE PROVOST AND VICE-PRESIDENT (ACADEMIC)

OFFICE OF QUALITY ASSURANCE

Cyclical Program Review - Implementation Plan
School of Computer Science

BComp (Honours) – Computer Science; BComp (Honours) – Software Engineering; BComp (General) – Computer Science; MSc in Computer Science, Master of Cybersecurity and Threat Intelligence, PhD in Computational Sciences

Implementation Plan – Recommendations selected for implementation

If the reviewers grouped recommendations into categories (by program, by implementation phase, etc.), please add the heading of the category in the chart below before each set of recommendations (see examples).

Recommendations should be listed in the order as they appear in the reviewers' report.

Recommendation	Proposed Follow-up	Responsibility for Leading Follow-up*	Timeline
Undergraduate Programs:			
1. Enhance experiential learning for all programs. Currently, this is met for the BCH.SE program, but not for BCH.CS. An option would be to make co-op mandatory for all students. Another option is to introduce a full-year capstone course with a substantial experiential learning component.	SoCS offered capstone course before, which was cut due to limited resource and the lack of consistency between offerings. Hence, the preferred option moving forward is to make co-op mandatory, which was also one of the proposed actions in Self-Study Report (E.2.1). SoCS is committed to implement this but needs additional resource for offering summer academic term. Based on the number of courses need to be offered, 3 new faculty positions are needed. Experiential Learning Hub will also be consulted on the	Undergraduate Program Committee School Director	Make decision in 2023-24 academic year on how to implement the mandatory co-op option. Discuss with higher admin and Experiential Learning Hub on resource needs

	additional resource needs for supporting co-op placement.		
2. The School should devise ways to incorporate undergraduate research in the final year (through courses of capstone projects).	Currently, SoCS undergraduate students can participate in research through CIS*4900/CIS*4910 courses and URA/USRA projects. However, the number of allocations for URA/USRA is limited to 5-6 each year and the enrollment for CIS*4900/CIS*4910 is constrained by faculty capacities. Discussions will be made on how to recognize faculty members' CIS*4900/CIS*4910 supervision efforts during the upcoming review of T&P guideline.		
3. A course of programming languages paradigms should be introduced to keep students exposed to modern programming languages.	One of the proposed actions (E.2.3) is to expose students to modern programming languages. A possible route is to develop a new elective course on vocational languages	Undergraduate Curriculum Committee	Propose the new course in 2023-2024. Offer the new course in 2024-2025.
4. The School should seek to improve the goals of the core Software Design courses for the BCH.SE program.	SoCS is committed to improve (and differentiate) the goals of different core Software Design courses. A motion was passed on September 2022 SoCS council meeting to form an ad hoc committee with the mandate of carefully examining the content of Software Design I-V courses.	Ad hoc Committee for Software Engineering program	Develop a plan by the end of 2023-2024 academic year. Implement the change in 2024-2025 academic year.
Graduate Programs:			
1. The graduate curriculum should undergo a revision in terms of content (to keep pace with recent	Reviewing and modernizing graduate course offerings is one of the planned actions (E.3.1) in the Self-Study Report. While several courses in the calendar reflect traditional	Graduate Curriculum Committee	Continue review and propose new graduate courses.

technologies and trends) and in terms of number of courses offered.	computer science with a fairly static course description, SoCS frequently offer "Topics" courses that reflect modern and dynamic topics. Once the contents of a "Topics" course become stabilized, it may be converted into regular graduate courses. Such conversion has led to 3 graduate courses being introduced in recent years. Additional ones will be implemented through this process as well.		
2. The School should develop a consistent and sustainable funding model for graduate students. This may include increasing the support level of graduate students.	SoCS will address this recommendation through funding research-based graduate students using tuition revenue received from the MCTI program.	School Director	Gradually introduce funding support based on available tuition revenue.
3. The School should develop a sustainable plan for increasing the number of graduate course offerings.	SoCS will actively discuss with the higher admin on the resource needs for increasing the number of graduate course offerings. As the university is aiming to increase SoCS undergraduate admission target from 200 to 300, additional teaching resources are needed cover more graduate courses.		
General:			
1. The University must address faculty renewal for the School. Renewal is critical for the viability of all programs, especially with the recent growth in undergraduate enrollment.	SoCS appreciates this recommendation and will continue to advocate the criticality of faculty renewal.		

2. The University should create a mechanism for admission that ensures that students can gain admission into undergraduate programs without overwhelming the School faculty and staff.	SoCS appreciates this recommendation and will continue to advocate the importance of meeting admission targets.		
3. The University should provide coherent collaborative space for the undergraduate and graduate students.	SoCS appreciates this recommendation and will continue to advocate the needs for additional space.		
4. The School should develop a strategic plan for growth, research, EDI and faculty hiring.	SoCS will explore the feasibility of targeted recruiting in future faculty hirings.		
5. The School should form an Advisory Committee with broad membership to provide strategic input for positioning the School and its programs within the University, the local community and the domestic and international stage.	SoCS will reach out to alumni, local community, and international collaborators to discuss the feasibility for setting up an Advisory Committee.	School Director	Explore the feasibility in 2023-2024 academic year.
6. The School should perform a dedicated review of coop education in Computer Science as a prerequisite for implementing compulsory coop (Action Item E.2.1).	SoCS will work with Experiential Learning Hub to review CS coop education before implementing compulsory coop.	School Director	Engage Experiential Learning Hub on a dedicated review.
7. The School should construct a plan for recruitment of a diverse undergraduate population. The	SoCS has discussed with Admission Services on the possibility of admitting undergraduate applicants based on criteria beside academic grades. We learned this is being discussed		

School should also establish specific tools to achieve this goal.	right now across the province. In the meantime, SoCS will continue its targeted outreach efforts, such as organizing the annual GoCodeGirl event.		
8. The School should ways to increase research funding and also to celebrate research excellence.	SoCS will connect faculty members with industry partners to facilitate funding applications for NSERC Engage, NSERC Alliance, and Mitacs Accelerate. Events that could connect faculty members with industry partners, such as Tech Showcase, will be supported. SoCS will promote research activities through holding annual research forum to showcase research conducted by undergrads, grads, and faculty members.	School Director	Connect faculty members with industry and resume research forum.

Summary:

SoCS greatly appreciate the inputs from external reviewers are happy to see that our programs were well recognized. We would love to follow the reviewers' recommendations, which will further improve our programs. It is worth noting that several of the planned implementation actions required additional resources (e.g., faculty/staff positions and teaching/research spaces) from the University. We understand that the University is exploring the feasibility for increasing SoCS enrollment, especially on the international student side. We are happy to support such initiatives, assuming there will be sufficient resources.

It is worth noting that, thanks to the support from the University, SoCS has significantly improved our programs since the previous CPR. For example, the University of Guelph was ranked #9 among Canadian Universities in the 2022 Time Higher Education CS subject ranking and #18 on the 2023 Macleans CS subject ranking (first time to be recognized as top 20 CS departments in Canada). The additional faculty positions will further improve our program

reputation, which will undoubtedly help the University to attract more and stronger applicants. In addition, with artificial intelligence and data mining being applied to many disciplines, new faculty positions in SoCS will help to support other research areas on campus, from bioinformatics, digital agriculture to quantum computing.

If there are opportunity for future faculty hires, SoCS has identified the following research areas as top priorities:

- Human-Computer Interaction
- Machine Learning
- Computer Graphics
- Artificial Intelligence
- Computer Vision
- Web & Information Retrieval
- Programming Languages
- Visualization

List recommendations NOT selected for implementation here and the reason for not implementing. These will be discussed with the Provost's Office prior to submission to SCQA.

*NB: Chairs/Directors along with Deans are responsible for monitoring Implementation Plans, though some of the specific activities may be delegated during the implementation phase. Responsibility for one-year follow up reports rest with Chairs/Directors, in consultation with the Dean and respective Associate Deans (Academic and/or Research and Graduate Studies). In some cases, additional timelines and reporting to BUGS or BGS may also be required.