

# Computer Science

## Graduate and Undergraduate Review

### Year 2 (2021) - FAR Implementation Report

(reviewed 2018/19)

#### Recommendation #1

The de facto admission average needs to be raised to 80%.

#### ARC Disposition of the Recommendation

ARC considers the recommendation to be not accepted. The de facto admission average is not under the sole control of the Department and cannot be set at a certain level in contradiction to provisions in the Faculty Handbook or university enrolment targets. ARC encourages the Department to investigate other measures (such as 2<sup>nd</sup> year entry) to address concerns of competitiveness and student quality as well as retention and student success.

#### Implementation Plan

Recommendation not accepted.

#### Comments 2020:

Although raising the student minimal entrance average would be detrimental to intake numbers (although it would improve retention rates), another option we are discussing is to require 2 high school mathematics credits for students entering any COSC Honours degrees (Honours, Honours Co-op, etc.). We would retain the current 1 HS mathematics requirement for students entering the 4-year with major program. This would better prepare Honours students for the mathematics requirements of the program.

#### Recommendation #2

Infusion of PLO 3b across program courses

#### ARC Disposition of the Recommendation

ARC considers the recommendation to be accepted and in the process of implementation. The Committee believes the Department is best-positioned to determine how to incorporate PLO 3b across program courses.

#### Implementation Plan (2<sup>nd</sup> Priority)

Responsible for approving:	Department
Responsible for resources:	Department
Responsible for implementation:	Department
Timeline:	Dean of Mathematics and Science to report by the end of academic year 2020/21

Actions	Responsibility	Year One*	Year Two	Year Three
<b>Action #1</b> Identify appropriate technologies and resources appropriate to the goals studied in various artificial intelligence courses (and others).	Department	T	T	

**Comments 2020:**

The ultimate responsibility for course content is the instructor. As new faculty join the department, new courses will be introduced, and appropriate technologies and resources will be considered and used when deemed appropriate, at the discretion of the instructor.

**Comments 2021:**

This recommendation is progressing. The department plans to hire two new faculty members in 2021. One faculty member has been nominated as a CRC Tier II in Bioinformatics/ Computational Biology (joint position with the Dept. of Biological Sciences). With these new positions, new advanced courses in the undergraduate and graduate program will arise. Naturally, new courses will address new technologies and resources in AI and other domains.

**Recommendation #3**

Inclusion of a required "Communication Skills for the Computer Scientist" workshop course

**ARC Disposition of the Recommendation**

ARC considers the recommendation to be accepted for consideration. The Committee believes the Department is best-positioned to determine how to incorporate communication skills into the curriculum, in conjunction with relevant campus resources.

**Implementation Plan (2<sup>nd</sup> Priority)**

Responsible for approving: Department  
 Responsible for resources: Department  
 Responsible for implementation: Department  
 Timeline: Dean of Mathematics and Science to report by the end of academic year 2020/21

Actions	Responsibility	Year One*	Year Two	Year Three
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<p><b>Action #1</b> The department will discuss this item at the next department retreat, tentatively planned sometime during 2020-21.</p>	<p>Department</p>	<p>D</p>	<p>T</p>	
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**Comments 2020:**

The department is planning a department retreat during 2020-21, to discuss this and other matters, including curriculum revision. We have been waiting for additional new faculty to be hired, who will introduce fresh perspectives and ideas.

Note: Due to COVID-19 mitigation measures, this action item has been delayed, due to prohibition of group meetings, as well as postponement of faculty searches. Once meetings are allowed again and faculty interviews resume, this action item will proceed.

**Comments 2021:**

Although a department retreat is still unscheduled due to COVID-19 lockdown, the department discussed this item at a department meeting. In the future, a dedicated course in writing, communication, and presentation skills will be considered. In the meantime, two alternative ideas will be investigated. (i) A-to-Z Learning will be contacted to see if they can design one or two workshops for our students. Topics may include presentation skills and technical writing. (ii) A course WRDS 2P14 (COMM 2P14) was once available for students. Although it hasn't been offered since 2019, we will contact the home units to see whether reviving this course might be possible.

**Recommendation #4**

Hiring of new faculty members.

**ARC Disposition of the Recommendation**

ARC considers the recommendation to be not accepted as it lies outside of the Committee's jurisdiction. The Committee expects that the Department will proceed through normal channels of advocacy for these faculty resources.

**Implementation Plan**

Recommendation not accepted.

**Recommendation #5**

Renovation of the department's teaching lab space, equipment, and software.

**ARC Disposition of the Recommendation**

ARC recognizes the necessity of ongoing renovation of lab space, equipment and software, however the Committee considers the recommendation to be not accepted as it lies outside of its jurisdiction. The Committee expects that the Department will proceed through normal channels of advocacy for these resources.

**Implementation Plan**

Recommendation not accepted.

**Comments 2020:**

A Facilities Management committee approved \$25,000 per lab for cosmetic renovations of two of our undergraduate labs (J301, J310). The Dean has offered to top up the funding as well. Although more significant renovations are necessary, this help is appreciated. All the hardware in all our labs will be replaced in 2020, thanks to funding by the Dean and the Office of Research Service (for research and graduate hardware).

**Comments 2021:**

Although hardware purchases were frozen in 2020, we are resuming purchase of hardware for teaching and research. Our Dean has been very supportive of this effort, and has contributed additional funds for the purchase of GPU computing hardware, as requested in the external review report for the PhD in Intelligent Systems and Data Science.

**Recommendation #6**

Development of a comprehensive plan for graduate training, research, and funding opportunities.

**ARC Disposition of the Recommendation**

ARC considers the recommendation to be accepted and in the process of implementation.

**Implementation Plan (1<sup>st</sup> Priority)**

Responsible for approving:	Department
Responsible for resources:	Department
Responsible for implementation:	Department
Timeline:	Dean of Mathematics and Science to report by the end of academic year 2019/20

Actions	Responsibility	Year One*	Year Two	Year Three
Action #1 The department will hold a retreat to fully consider this recommendation.	Department	D	D	
Action #2 The department's plan for a future Centre of Intelligent Systems will be a means for supporting graduate training, research, and funding opportunities.	Department	T	T	

**Comments 2020:**

As with Recommendation #3, the department will discuss this item at a planned department retreat. The addition of newly hired faculty will help to infuse new ideas to possibly address this item. The Centre of Intelligent Systems will also help propel this initiative.

Note: Due to COVID-19 mitigation measures, this action item has been delayed, due to prohibition of group meetings, as well as postponement of faculty searches. Once meetings are allowed again and faculty interviews resume, this action item will proceed.

**Comments 2021:**

The department's proposal for a PhD in Intelligent Systems and Data Science (jointly with the Dept of Mathematics and Statistics) is about to be submitted to ARC. Together with new faculty hires, a new CRC, and a future Centre of Intelligent Systems, graduate research is growing, and this recommendation will advance further.

**Recommendation #7**

Highlighting the strategic importance of Computer Science.

**ARC Disposition of the Recommendation**

ARC considers the recommendation to be accepted and in the process of implementation. The Committee also recognizes the reviewers' recommendation in the contextual comments, to develop a long-term plan for faculty renewal. The Committee understands that advocacy for future faculty resources will need to proceed through normal channels.

**Implementation Plan (1<sup>st</sup> Priority)**

Responsible for approving: Department  
 Responsible for resources: Department  
 Responsible for implementation: Department  
 Timeline: Dean of Mathematics and Science to report by the end of academic year 2019/20.

Actions	Responsibility	Year One*	Year Two	Year Three
<p>Action #1                      The department successfully promotes our undergraduate programs at institutional and regional university fairs (OUF). Our intake of domestic and international students into our programs continues to grow. Interest in our MSc program also continues to be strong, especially amongst international applicants.</p>	Department	T	T	
<p>Action #2                      The department continues to prepare for the new BSc in Data Science and Analytics program (jointly offered with Mathematics &amp; Statistics, and Fac of Business). Progress in the joint PhD in Intelligent Systems and Data</p>	Department	T	T	

Science is also progressing. Both initiatives have the full support of the Dean.				
<b>Action #3</b> The department is planning the creation of a Centre of Intelligent Systems. Detailed planning will commence once the PhD proposal has been approved by ARC. The Centre will be a means for promoting the department's research, and the department's strategic importance to Brock.	Department	T	T	

**Comments 2020:**

The department is pleased to report that the Dean's office, as well as Research Office, have contributed funds to overhaul our computer hardware resources. Our undergraduate labs, graduate computing workstations, research cluster, and data storage, will be replaced by the end of Summer 2020. We greatly appreciate that the administration have recognized the strategic importance of computer science in this way.

**Comments 2021:**

Many recent developments are evidence of the strategic importance of computer science in the university. Two new faculty will be hired in 2021. A CRC position will be finalized in the near future (the candidate is a current department member). New programs such as the BSc in Data Science and Analytics, and PhD in Intelligent Systems and Data Science, are in advanced stages of submission. Faculty will be involved in the new engineering initiative in future years. A Centre of Intelligent Systems is planned. Student intake in the BSc programs are healthy and should grow post-pandemic. Our MSc application numbers are higher than they've ever been (165 applications for Fall 2021).

**Recommendation #8**

Grow the Department's graduate program.

**ARC Disposition of the Recommendation**

ARC considers the recommendation be accepted and in the process of implementation. The Committee recognizes that a Program Proposal Brief for a new PhD program is in the final stages of development.

**Implementation Plan (1st Priority)**

Responsible for approving:	Department
Responsible for resources:	Department
Responsible for implementation:	Department
Timeline:	Dean of Mathematics and Science to report by the end of academic year 2019/20

Actions	Responsibility	Year One*	Year Two	Year Three
<b>Action #1</b> Two new faculty have joined the department in January 2020, and both members are research active and are admitting new MSc students. New hires, including a CRC Tier II, are expected in 2020-21. All these hires will result in growth to the existing graduate program.	Department	T	T	
<b>Action #2</b> The PhD in Intelligent Systems and Data Science (jointly with Dept of Mathematics and Statistics) is nearing submission to ARC.	Department	T	T	
<b>Action #3</b> A planned Centre of Intelligent Systems will help promote the graduate programs (see items #6 and #7)	Department	T	T	

**Comments 2020:**

Above action items are self-explanatory.

**Comments 2021:**

Recent events have promoted the graduate program, and future events will continue to do so. Two new hires are planned for 2021. A CRC Tier II in Bioinformatics/Computational Biology has been nominated, which should be finalized in the near future. The PhD in Intelligent Systems and Data Science received strong support from external reviewers, and submission of the final proposal to ARC is imminent.

One constraint to the growth of the graduate program is decreasing available office space for graduate students. With more faculty and a new PhD program, this will need to be addressed in the near future.

**Recommendation #9**

CIPS accreditation.

**ARC Disposition of the Recommendation**

ARC considers the recommendation to be accepted for consideration.

**Implementation Plan (3rd Priority)**

Responsible for approving: Department  
 Responsible for resources: Department  
 Responsible for implementation: Department  
 Timeline: Dean of Mathematics and Science to report by the

Actions	Responsibility	Year One*	Year Two	Year Three
<b>Action #1</b> Discussion of curriculum revisions will be an item of discussion at future department retreat.	Department	D	C	

**Comments 2020:**

Action item is self-explanatory.

Note: Due to COVID-19 mitigation measures, this action item has been as well as postponement of faculty searches. Once meetings are allowed again, this action item will proceed.

**Comments 2021:**

The department discussed this issue at a department meeting. The feeling is that we should not consider CIPS accreditation further at this time. Some factors behind this decision include a lack of resources (especially faculty numbers), and the potential loss of flexibility in our undergraduate curriculum that would arise with CIPS accreditation.

**Recommendation #10**

Intra-department collaborations.

**ARC Disposition of the Recommendation**

ARC understands the recommendation to be referring to “inter” departmental collaborations from the context provided in the Reviewers’ Report. The Committee considers the recommendation to be accepted and in the process of implementation. To an extent, this is already current practice as described by the Department in its response.

**Implementation Plan (1st Priority)**

Responsible for approving: Department  
 Responsible for resources: Department  
 Responsible for implementation: Department  
 Timeline: Dean of Mathematics and Science to report by the end of academic year 2019/20.



Actions	Responsibility	Year One*	Year Two	Year Three
<b>Action #1</b> New and future hires (including CRC Tier II with Dept of Biological Sciences) will encourage interdepartmental collaboration.	Department	T	T	
<b>Action #2</b> Future Centre of Intelligent Systems will further promote collaborative research with other departments.	Department	T	T	

**Comments 2020:**

As new faculty join the department, the chances of collaborative ties improve. The CRC Tier II with BIOL will further strengthen existing collaboration between Computer Science and Biological Sciences in bioinformatics research. Collaboration is an academic freedom issue, and hence is always at the discretion of individual faculty members.

**Comments 2021:**

With our new CRC in the future, collaboration with the Dept. of Biological Sciences will be boosted. Our new hires, past and present, also increase the possibility of inter-department collaboration. The new PhD in Intelligent Systems and Data Science, as well as BSc in Data Science and Analytics, will promote collaboration between the departments of computer science and mathematics & statistics. A future Centre of Intelligent Systems will also promote collaboration.