REPORT OF THE ACADEMIC PLANNING COMMITTEE
TO THE REGULAR December 2019 SENATE

FOR DISCUSSION

Eighteen-month follow-up from ACAPLAN's recommendations from the Program Review for the following programs: **Mathematics and Computer Science**

Below is an excerpt from the Institutional Quality Assessment Process at Laurentian University approved at the Quality Council in June 2011 and revised in 2018 and 2019.

PROCESS FOR FOLLOW-UP

No later than 18 months after Senate submission, those responsible for implementing the changes writes a report to the Dean and to ACAPLAN, on the actions it has taken in response to the review.

QUALITY ASSURANCE – CYCLICAL PROGRAM REVIEW OF LAURENTIAN UNIVERSITY'S Mathematics and Computer Science Programs

Recommendation:
R7: Perform a self-critical evaluation for computer science courses to improve outdated contents.

i. **R5: Include both COSC 4117 (Artificial Intelligence) and COSC 4306 (Computer Graphics) in the Game Design Specialization.**
ii. **R9: Pursue the search for solutions to offer a wider choice of elective specialty courses in the mathematics program.**
iii. **R4: Consider adding a Calculus course in the computer science programs.**
iv. **R8: Revise misleading courses titles (course 1 without a 2 versions).**

Response:
R7:
The department completed the review process of both the first- and second-year core courses. Changes were made to COSC1046, COSC1047 and COSC2947 to update the course descriptions and to add mandatory lab sessions to improve the learning outcomes and to accommodate the increased enrollment in the computer science program. These changes were approved. The department will continue the review process to include other third- and fourth year courses.

i. **R5:**
The department discussed the recommendation to include both COSC4117 and COSC4306 in the Game Design Specialization. Currently, students must take either 4117 (Artificial Intelligence) or 4306 (Graphics); this was done since these two courses are usually cycled. It was pointed out that if the department chose to change the "or" to "and," then a fourth-year course requirement should be removed from the program. With the severe shortage in faculty members in the department, there is a general consensus in the department that it would be more practical to leave the requirements as they are and

to advise students in the program to take both courses. Upon hiring new members, the department will be able to offer both courses in yearly basis.

ii. **R9:**
Offering a wider choice of elective courses in the mathematics program is among the top priorities for our department to improve the learning outcomes for our students. Unfortunately, the limited resources the department currently has severely limits our ability to offer more courses. The department started the process to hire a master lecturer starting from January of 2020. This new position will help offer more courses starting from the next academic year.

iii. **R4:**
The department started a plan to create math courses to serve students from other departments. Last year, the department created a new math course MATH1506 for business students. This year, the department started the process of designing a calculus course for science students who are not enrolled in the mathematics program. The idea from offering these courses is to allow our existing math courses to be customized to fit the needs of our mathematics degree. At the same time, the new course will focus more on applications rather than on pure mathematical concepts. Upon approval of the new course, the department plans to update the existing computer science degree requirements to include the new calculus course.

iv. **R8:**
This recommendation is going on hand with the self-critical evaluation for computer science courses as explained in the response to R7.

R2: Investigate in depth the critical situation of low graduation in computer science programs.

Response:
The department believes that there is a sharp transition in the difficulty levels between the first- and second-year courses in the computer science program. Improving first year courses is the key to better prepare the students to meet the challenges they face latter in the program, and thus reduce the rate of transfer to other programs. The department adopted a two-phase strategy to solve this issue:

- Phase one (*completed*):
  Mandatory lab sessions were added in the programming courses in computer science. This phase is successfully completed and the new changes were approved for COSC1046, COSC1047, and COSC2947. In addition to the mandatory lab sessions, the department offers extended COSC clinic hours (9 hours per week) to help students improve their programming skills.
- Phase two (*in progress*):
  Create independent sections for students from other departments. This will allow the department to increase the depth of material presented to our students. The department already started this phase for the mathematics courses as explained in the response to recommendation R4. A similar step will follow for the first-year programming courses in

computer science. There is a consensus among members of the department that this step will significantly improve the retention rate in computer science. However, more resources (faculty members and lab spaces) will be needed. The department hopes to get new positions in the near future.

R6: Revise the computer science laboratories to enhance availability (private labs for the M&CS Department).

The computer science department currently has 2 labs; F441 and F443 with capacities of 48 and 32 students respectively. With the increased enrolments in our first-year courses, the labs have been in use throughout the day for teaching and are therefore not available for students to practice their programming assignments. The department is looking forward to getting more labs with bigger capacities in the near future.

R10: Consider creating a bilingual computer science program.

Response:
The department currently suffers from severe understaffing problem. This year nearly 40% of the courses were offered as overloads. The creation of a bilingual computer science program is currently infeasible with the resources at hand. The department is looking forward to hiring new faculty members in the near future.

R1: Hire faculty members to support the new specializations Programs.

Response:
The department strongly supports this recommendation. It will solve other issues as explained in the response to recommendations R2 and R10.

R3: Consider making homogeneous sections for the Calculus I course.

Response:
Please refer to the response to recommendation R4.