

**Final Assessment Report**  
Submitted by SUPR-G to SCAPA

<b>Program:</b>	<b>Scientific Computing Collaborative Graduate Program</b>	
Degrees Offered:	Masters or PhD	
Approved Fields:		
External Consultants:	Nikolas Provotas, Professor, McGill University	An-Chang Shi, Professor, McMaster University
Internal Reviewers:	Nandi Bhatia, Professor, Western University	
Date of Site Visit:	September 26, 2014	
Evaluation:	<b><i>Good Quality</i></b>	
Approved by:	<i>SUPR-G on January 26, 2015</i> <i>SCAPA on February 4, 2015</i>	

**Executive Summary**

The one day visit of the review team provided the occasion for reviewers to interact with faculty members from the departments of Applied Mathematics, Computer Science, Statistical and Actuarial Sciences, and Physics and Astronomy, in addition to meeting graduate students, staff members, Assistant university librarian, and representatives of SGPS. The conversations revealed useful information about what makes the Program in Scientific Computing, in the reviewers' words, a "value add" program, and pointed out ways in which the program could be further strengthened. Overall, the reviewers support the continuation of this program, identifying it as "well-structured and innovative," timely, and providing "incremental value" to students getting trained in the field of Scientific Computing. Below are some points that external reviewers identified as the program's strengths while simultaneously offering suggestions for improvement.

**Significant Strengths of Program:**

- High competence of faculty in research, teaching, training of students, and strong record of publication
- Collaborative nature of the program offers an innovative approach to the teaching of scientific computing at the graduate level
- Learning outcomes are well expressed in the brief as well as in course descriptions
- Program's requirements are clearly articulated, both in the brief and in the course structure, and the course structure is appropriate
- Timeliness of the program and its ability to bridge a severe training gap at the undergraduate level, a gap based on limited competency in scientific computing in most undergraduate curricula in Canada
- High quality of students
- Excellent resources that include the Sharcnet facility, library materials, study rooms, group workrooms, and seminar practice rooms

**Suggestions for improvement & Enhancement:**

- While course learning outcomes are defined, identifying concrete learning outcomes for the program would be useful (for example, learning how to program, formalizing knowledge of numerical techniques, innovative thinking, gaining formal credibility on their diploma). Some clarification as to how specific courses measure these learning outcomes is recommended
- Clarification regarding requirements for the seminar course and Sharcnet workshop would be helpful

- The Sharcnet element of teaching is an exciting component of the program and should be both promoted and further expanded to better address the program's needs in terms of consolidating students' experience and skills
- Scientific Computing is relevant to many disciplines that are not currently included within the scope of the program. Broadening participation, and course offerings, to include appropriate aspects of biology, biochemistry, health sciences, finance, computer science, statistics, and "big data" would help with interdisciplinary outreach and would increase program enrolment.

<b>Recommendations required for Program sustainability:</b>	Responsibility	Resources	Timeline
Upgrade the Sharcnet course to a "capstone" course, which will enable clear documentation for professional development	Core faculty	Sharcnet	Sept. 2015
Introduce programming courses for students with insufficient programming background	Core faculty		Sept. 2015
Promote the Program through advertisement, an improved website, and an active recruitment strategy, in order to achieve higher enrolments	Director, Chairs of participating programs, graduate chairs	Program	Sept. 2015
Define a mission statement and high-level outcomes for the Program through consultation with current, and potential new, participating departments	Program director and advisory committee		Sept. 2015
Broaden scope of program, and increase the number of participating departments, to embrace opportunities to highlight the relevance of scientific computing in disciplines such as biology, biochemistry, health sciences, finance, computer science, and statistics.  Increase interdisciplinarity by adding partner programs and introducing opportunities to create relationships which support interdisciplinary research	Program director and advisory committee		Sept. 2015
Evaluate resources and supports for program and program director	Dean, Associate Dean, program chair	Possibly budgetary	Sept. 2015