

SENATE COMMITTEE ON UNIVERSITY PLANNING

Academic Unit Review – Summary

Department: Mathematics and Computer Science

Site Visit	16-17 March 2009
Date of Report	May 2009
Informal Response to Planning	May 2009
Formal Response to Planning	October 2009
Implementation Update	Expected Winter 2011
Midterm Review	Expected Fall 2014

Summary of Departmental Self-Study

The Department of Mathematics and Computer Science (“MCS”) offers a broad variety of courses and programs in Mathematics and Computer Science, including BA and BSc programs in Mathematics, Computer Science, Mathematics and Computer Science, and interdisciplinary programs (Mathematics and Physics, Computer Science and GIS). Many courses are open to students outside MCS programs and some courses are required by all BSc students (with extra math requirements in Physics, Chemistry, and Environmental Science) as well as students in Economics and Commerce. The Department has 8.0 FTE faculty members, 5.5 in Mathematics and 2.5 in Computer Science (one vacant position is currently filled by a three-year term position; the ongoing complement is 9.0 FTE). Enrolments put MCS roughly in the middle, with 141 students per faculty member in Fall 2008 (university range is 61 to 237). Most registrations in Mathematics are in introductory and service courses. Enrolments in Computer Science programs around the world declined in the early 2000s and Mount Allison was not immune. Majors and Honours in MCS have averaged about 15 students per year since 2000. The Department has solid record of research achievement (including NSERC funding) and of student involvement in summer research projects. Many graduates have won NSERC postgraduate scholarships. Mathematics faculty members teach 5 courses per year while Computer Science faculty members teach 4 courses plus labs; all are active in service within the university and in the profession. Over the past five years MCS has revised its curriculum extensively; added new courses; and created two new programs (minor in GIS [with GENV] and joint Honours with Economics). In 2008, a Mathematics Resource Centre was established. MCS has identified opportunities for the Department to be involved in rethinking the B.Sc. core curriculum, addressing the challenge of multiple statistics courses, and participating in a New Brunswick Graduate School. The Department has developed a plan for curriculum renewal, in consultation with other Departments. Facilities and equipment require renewal and a plan needs to be developed.

The most significant challenge is in the area of staffing: within the next five years as many as half of the current tenure-stream faculty may retire. This is an opportunity for program renewal, although pitfalls abound; ideally, staggered hiring will occur.

Summary of External Reviewers' Report

It is clear that the Department of Mathematics and Computer Science is doing a commendable job in regards to providing quality instruction, service, and research. The Department is functioning at a very high level and should be well supported by the senior administration. The two disciplines should remain as one. The upcoming retirements will require significant decisions and planning by the Department in concert with senior administration. It may be appropriate to allow one or two of the replacement positions to be at the Associate level in order to ensure appropriate administrative and leadership experience. The most significant recommendation is to commence a major strategic planning exercise. The research profile of MCS faculty members is impressive and the teacher-scholar tradition should be maintained in future hires. The TORCH cluster should be reviewed and reassessed. A number of specific recommendations were made with respect to curriculum and facilities (e.g., dedicated CS lab). A quantitative sciences focus for CS was recommended, as was the exploration of a coop program. Technical support resources for CS are dangerously minimal. Generally supportive student input was received. The Department could be more active in the student recruitment process. The three-year CS position should be reviewed as soon as possible, with a view to advertising for a tenure-track faculty member for 1 July 2011. Strategic planning should include the following elements: learning outcomes for Majors and Honours; staged plan for revising the curriculum; a research vision for the Department; hiring guidelines; a plan for a CRC; enrolment targets; and building a vibrant community. The next few years will be challenging, but exciting. It appears that faculty members are committed and well positioned to make progressive changes.

Summary of Departmental Response

Department members were pleased with the preparation and thoroughness of the external reviewers as expressed both in their report and in their questions and comments during the visit. The recommendations were characterized as both "thoughtful" and "energizing" and the Department has accepted almost all of them without demur. An accelerated strategic planning exercise has already begun and the resulting plan will include a hiring plan and curriculum review. Other Departments will be consulted as this progresses. Searches to fill vacant positions will be as broad as possible in terms of research specialty. An equipment budget line for CS teaching needs to be provided. The TORCH cluster will be discontinued. A number of curricular recommendations are under active consideration. The workloads between Mathematics and Computer Science need to be equalized.

The Department's goals are to maintain their rigorous programs in mathematics even as they evolve to reflect the areas of faculty specialization; continue to refine their programs in computer science; strengthen the connections between the two disciplines for the benefit of both; provide high quality research in both disciplines; provide research opportunities for students in both disciplines; and develop new alliances with other Departments to increase opportunities for collaboration in both teaching and research. The recently vacant position needs to be filled immediately and the 3-year term position reviewed. Future hires do not necessarily need to be at the Associate level. MCS would be willing assist with the rationalization of statistics courses within the University.

Planning Committee and Provost Response

The Planning Committee and the Provost commend the Department for the excellence of its study and response and for their enthusiastic engagement with the academic unit review process. There is full agreement with the Department's response to the specific recommendations and general direction for the next few years.

The Provost will authorize a replacement tenure-track position in Mathematics immediately, for 1 July 2010, and will ensure that the three-year term position is reviewed during the Winter term 2010 so that a decision can be made early in the 2010-11 academic year about its future. The MCS staffing plan should include a tentative sabbatical and retirement plan. Upon its receipt, the Provost will consider bridging appointments in light of confirmed retirements.

The issue of resources for Computer Science is currently being addressed through the Financial Sustainability process and a plan should be ready for review by the end of the current academic year.

The Provost will establish an *ad hoc* committee to assess the delivery of statistics courses across the University, with a view to considering their rationalization.