

## **PERIODIC PROGRAM REVIEW EXECUTIVE SUMMARY – BIOLOGY (BSc)**

In 2004, the Applied Chemistry and Biology Program underwent a major curriculum restructuring which concluded with the introduction of 11 new programs in Science in the fall of 2005, including a standalone program in Biology (regular and co-op option). This program along with the options (Biophysics and Computational Biology) have successfully trained and graduated many students over the last seven years. Intake for the Biology Program increased from 101 (F2005) to 208 (F2012). By far, the Biology Program has been the most popular choice for science students.

The curriculum was designed with a first year that was common with other science programs at Ryerson (including Chemistry, Contemporary Science, Mathematics, and Medical Physics) although Mathematics has now opted out of the common year. The initial curriculum concentrated heavily on microbiology and environmental biology but was recently overhauled to include nine core areas of biology identified as necessary cornerstones of the discipline; they include cell biology, microbiology, genetics, evolution, ecology, molecular biology, zoology, botany and biochemistry. The program was initiated with two options in Biophysics and Computational Biology (now named Bioinformatics and Computational Biology). In 2012, a third option in Environmental biology was added because of the large demand of students for the environmental elective course and the strength of the faculty expertise. A new program in Biomedical Sciences which concentrates on the cell and molecular aspects of biology has now also been spun out of this general Biology Program and commenced in fall 2013.

The professional elective course package has also grown over the last 7 years and currently includes 21 electives in Biology or Biochemistry although only 4 to 5 can be offered in any one semester. The lack of faculty and the expense associated with hiring temporary lecturers limits the ability to offer more electives and limits the ability of the students to specialize in any given area of biology.

Over the last eight years, the Department has hired ten new faculty members with a net increase of seven when taking into account retirements, resignations and assignments to administration. All faculty members hold PhD's. They have all successfully acquired external funding and have developed research programs in their areas and taken on graduate students. Of the ten hired, six have been in the biological area: one in botany, two in biochemistry and three in cell and molecular biology. Despite the increase in faculty numbers, the Department is still under staffed because of the large increase in both biology student admissions and total biology course enrollments during the same time period.

The Department currently resides in the Northeast Corner of Kerr Hall. It houses the main departmental office, most of the faculty offices, and all of the undergraduate teaching labs. In total there are three biology laboratories and one biochemistry laboratory. With the large increase in total biology enrollments, labs have started to be run back to back with allows for no prep time for the technologists to prepare the lab materials for the next section of students. Student enrollment in first year biology class has grown from 209 to 625 over the last 8 years and lab sections required for first year in biology alone have increased from 8 to 25 sections. Furthermore the single biochemistry laboratory room limits the lab offerings in that area due to the constant occupation of the room by the 3 current core biochemistry courses. The initiation of a new program in Biomedical Sciences this year (2013) with an intake of 150 (approx 6 more sections) will put further pressure on these lab spaces.

Overall, the Biology Program has been very successful at attracting students and providing a strong comprehensive curriculum. The future success of the program, however, is contingent on the provision of sufficient resources for the maintenance of the program. To meet the goals of the Department and program, additional faculty need to be hired and given adequate resources (space, money, infrastructure,

etc.) to develop successful research programs to help us retain good quality educators to provide current and relevant information within a robust teaching and learning environment.