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A Mathematics Program for Future Teachers

Knowing that many our mathematics majors were future teachers, a collaborative team from Mathematics and Education developed a Mathematics for Education Honours Major program at York University. I will talk about some principles of our design, some key debates and choices built into this design, some of courses/pedagogy which are central to the program, as well some challenges which remain.

The design drew on: working group reports from the Canadian Mathematics Education Study Group; Mathematics Association of America reports; discussions with teachers; discussions at the Fields Institute Mathematics Education Forum; and informal reports from recent graduates and senior undergraduates. The design was constrained by the range of courses currently in our curriculum (even if these were seldom taught), and the financial constraints that each new section offered here probably means another section elsewhere in mathematics is not offered.

The first focus is on breadth in mathematics and statistics, with exposure to the range of 'mathematical processes' (not topics) that are at the core of the current Ontario curriculum. A second implicit focus is on university classroom pedagogies that model mathematical processes desired in the schools (e.g. use of technology, group work, communication, problem solving, multiple representations) as well as 'capstone experiences' to draw together approaches and representations from the range of prior courses and to explore connections between parts of mathematics and approaches to doing mathematics. I will also sketch some of the impacts on the department, the recruitment of students, and the collaborations between mathematics and education.