Proposed Changes to the Undergraduate Honors Program in Probability and Statistics

This document contains two proposed changes to the Honors Probability and Statistics Program, one, a change in the prerequisites for MATH 356, MATH 357, and MATH 587 and the other, a substitution of one course for another. The proposed changes herald further possible changes to our statistics “programs”, changes that have been under discussion by the Statistics Group for the past two years.

Proposed changes to the Honors Probability and Statistics Program and course offerings

1. Currently MATH 356 has Honours Analysis 2 (MATH 255) or Analysis 2 (MATH 243) as a pre-requisite.

Proposed revised calendar wording for MATH 356: Pre/co-requisites: Co-requisite, MATH 242. Pre-requisites, MATH 133 and MATH 222 or permission of the Department.

2. Currently MATH 357 has Analysis II as a pre-requisite.

Proposed revised calendar wording for MATH 357. Pre/co-requisites: Co-requisite, MATH 255 (Analysis 2). Pre-requisite, MATH 356 or permission of the Department.

3. Currently Honours students in Probability and Statistics can take either MATH 355 (Analysis 4) or MATH 587 (Advanced Probability) as a complementary course.

Proposed new program restriction: Students in the Honours program in Probability and Statistics are required to take MATH 587. Under the current Honours program MATH 356 is listed as a pre-requisite for MATH 587. Under the new proposal the pre-requisites would change to: MATH 356 and MATH 255 or MATH 243, or equivalent.

MATH 355 cannot be taken as a substitute for MATH 587. Students may obtain credit for both MATH 587 and MATH 355.

(MATH 355 should be moved to the list of complementary courses from which 18 credits must be selected.)

Rationale

Currently, apart from MATH 547 (Honours Stochastic Processes), students in the Honours Probability and Statistics program must wait until they have completed MATH 357 (almost always at the end of their second year) before they can take further courses in statistics. By ensuring that MATH 356 and 357 can be taken in the first year, students interested continuing in probability and statistics will be able to take follow-up statistics courses starting in Year 2. At the moment, they are forced to squeeze all these statistics courses into the final year,
which reduces both their options as to when they can take these courses as well as the number of statistics courses that they can actually take by the time that they graduate.

Since basic measure theory is taught in MATH 587 and since it introduces students to crucial notions in probability (for example, distributions, expectation, independence, laws of large numbers, conditional expectation), topics not part of the Analysis 4 syllabus, it is felt that MATH 587 should replace Analysis 4 as one of two complementary courses for students in Honours Probability and Statistics.

The addition of the words, “or equivalent” in the pre-requisites for MATH 587 is to allow the anticipated few students who have taken MATH 323 and either Honours or Majors Analysis 2, to take MATH 587. This includes incoming statistics graduate students, some of whom have limited pure mathematics preparation.

**Note:** Should the Honours program in Mathematics change, some of the above proposals might have to be revisited.