Qualifying Exam Requirements for the Ph.D. in Mathematics

The requirements below are for students in pure mathematics, not in statistics. For students in Statistics: Qualifying Exams must be passed in Statistics, Probability, and Applied Statistics.

1. Students must pass 2 qualifying exams from the following list:
   - Algebra (Math 600, 601)
   - Analysis (Math 630, 660)
   - Geometry (Math 730, 740)
   - Probability (Stat 600, 601)
   - Statistics (Stat 700, 701)
   
   A student in pure mathematics can use at most one of Probability and Statistics to satisfy the exam requirement.

2. Students must take four additional semesters of courses from the following list, with a grade point average of 3.3 or better for the four courses used to satisfy this requirement. Courses with grades less than B cannot be included (for example, B− is not allowed).
   - Math 600, 601 (Algebra)
   - Math 630, 660 (Analysis)
   - Math 730, 740 (Geometry)
   - Stat 600, 601 (Probability)
   - Stat 700, 701 (Statistics)
   - Math 634 (Harmonic Analysis)
   - Math 642 (Dynamical Systems I)
   - Math 712, Math 713 (Logic)
   - Math 734 (Algebraic Topology)
   - AMSC 666, AMSC 667 (Numerical Analysis)
   - Math 631 (Real Analysis)
   - Math 670 (ODE)
   - Math 673, Math 674 (PDE).

   The four semesters are not required to be in the same sequence of courses. For example, Math 730, Math 670, AMSC 666, and AMSC 667 would be acceptable. These four semester-long courses must be distinct from the ones supporting the qualifying exams passed in Part 1.

   A student may take and pass a third (and possibly, a fourth) qualifying exam in place of taking the actual courses. For example, passing the written exams in Algebra, Analysis, and Geometry would count as 2 exams plus 2 semesters.

   One qualifying exam must be passed by January of the second year, and all requirements must be finished by January of the third year.

   Students who have taken courses from the second list elsewhere may petition the graduate chair to have such courses satisfy up to two semesters of the four-semester requirement (although generally students should instead use these courses as preparation for qualifying exams).
Each course on the lists should have serious assessment methods (graded homework, projects, exams, and/or similar). There should be some significant assessment that is guaranteed to be done solely by the student (that is, an exam, not only homework).

Transition Plan

Students who are currently enrolled may complete the requirements under either the new system (2 exams from the list of 5, plus 4 one-semester courses) or the old system (3 exams).

Students who enter in Fall 2014 or later must use the new system.

Note: During the transition period, it is possible that a field committee will have to write an exam for a single student. There seems to be no fair way to avoid it, and the problem will disappear soon.

Note: The Geometry Exam is changing from using Algebraic Topology to using Differential Geometry. Therefore, the following apply to the Geometry courses: If a student passes the Geometry Exam and takes both Algebraic Topology and Differential Geometry, then one of these may count as one of the 4 courses and the other as the quals course. If a student passes the Geometry Exam by January 2014, then Differential Geometry may be used as one of the four one-semester courses. If only one of Algebraic Topology and Differential Geometry is taken and the Geometry Exam is passed in August 2014 or January 2015 (the transition period for the Geometry Exam), then the course cannot be used toward the 4-course sequence. Starting with August 2015, only Differential Geometry (and Math 730) will be used for the Geometry Exam, so Algebraic Topology may be used as one of the four courses.

Note: Any special cases that arise during the transition will be treated on an individual basis by the Graduate Committee.