**Suggested prerequisites:**

We recognize that our students come from many different places and with a significant range of differing backgrounds. Hence there is no fixed and rigid list of prerequisites, and applicants are considered and often admitted even if their formal previous mathematical education is very different from the informal list of prerequisites below. **In general, we’d like to see some sort of overall mathematical maturity and experience, and we appreciate (though we do not require) evidence of in-depth concentration in one mathematical discipline or another.**

Yet here’s a non-binding list of courses that are recommended to applicants from within the University of Toronto in order to be seriously considered for the **doctoral stream master’s program**. Students coming from other institutions will have to make the appropriate substitutions:

**Doctoral-stream master’s program:**

*2nd year Advanced ODE’s, e.g. MAT 267H*


*3rd year Real Analysis, e.g. MAT 357H*


*3rd year Complex Analysis, e.g. MAT 354H*

Approximate syllabus: Complex numbers, the complex plane and Riemann sphere, Möbius transformations, elementary functions and their mapping properties, conformal mapping, holomorphic functions, Cauchy’s theorem and integral formula. Taylor and Laurent series, maximum modulus principle, Schwarz’s lemma, residue theorem and residue calculus.

*3rd year Algebra, e.g. MAT 347Y*

Approximate syllabus: Groups, subgroups, quotient groups, Sylow theorems, Jordan-Hölder theorem, finitely generated abelian groups, solvable groups. Rings, ideals, Chinese remainder theorem; Euclidean domains and principal ideal domains: unique factorization. Noetherian rings, Hilbert basis theorem. Finitely generated modules. Field extensions, algebraic closure, straight-edge and compass constructions. Galois theory, including insolvability of the quintic.

*3rd year Topology, e.g. MAT 327H*


In addition to that we also value some ability in computer programming and some background in physics (though neither is required).
Likewise here’s a non-binding list of courses that are recommended to applicants from within the University of Toronto in order to be seriously considered for the terminal master’s program. Students coming from other institutions will have to make the appropriate substitutions:

**Terminal master’s program:**

**Linear Algebra, e.g. MAT 224**


**Groups and Symmetries, e.g. MAT 301**


**Complex Variables, e.g. MAT 334**

Approximate syllabus: Theory of functions of one complex variable, analytic and meromorphic functions. Cauchy’s theorem, residue calculus, conformal mappings, introduction to analytic continuation and harmonic functions.

**Real Analysis, e.g. MAT 337**