

PMATH 950, Winter 2025: Analytic methods in convex geometry

Instructor: Kateryna Tatarko, ktatarko@uwaterloo.ca

Description: This course is an introduction to convex geometry which is the study of convex sets in Euclidean space. Our goal is to develop a variety of classical tools and techniques, including analytic, combinatorial and algebraic methods, and explore their applications such as isoperimetric inequalities, concentration phenomena, uniqueness problems, etc.

Suggested literature: The course notes will be mostly self-contained, but below I recommend some additional resources:

1. D. Hug, W. Weil, “Lectures on Convex Geometry”.
2. S. Artstein-Avidan, A. Giannopoulos, V. D. Milman, “Asymptotic Geometric Analysis”, Parts I and II.
3. K. Ball, “An Elementary Introduction to Modern Convex Geometry”.
4. A. Barvinok, “A course in convexity”.