

# CO 739: Topics in Macdonald polynomials

T/Th 11:30-12:50pm, MC

**Instructor:** Olya Mandelshtam

This course is an introduction to several families of symmetric, quasisymmetric, and associated nonsymmetric functions connected to Macdonald polynomials from a predominantly combinatorial perspective. This will include symmetric and nonsymmetric Macdonald polynomials, Hall-Littlewood polynomials, LLT polynomials, and Jack polynomials. Recent developments on applications to integrable systems and probabilistic particle processes will be discussed.

**Resources:**

- *Symmetric functions and Hall Polynomials*, I. G. Macdonald. **Available online.**
- *The  $q, t$ -Catalan Numbers and the Space of Diagonal Harmonics*, J. Haglund.  
**Available online:** <https://www2.math.upenn.edu/~jhaglund/books/qtcat.pdf>
- *Enumerative Combinatorics*, Volume 2, Richard P. Stanley.

**Prerequisites:** Students should be reasonably comfortable with classical symmetric function theory (CO 631 material).