Math 595 Topics in Algebraic Combinatorics

Instructor: Alexander Yong

Place and time: 149 HENRY BLD; MWF from 10:00 am to 10:50 am, Fall 2012

This is a topics course on algebraic combinatorics. The goal is to expose the participant to three key (and interconnected) research themes in the field.

(1) Symmetric polynomials: Macdonald, Schubert and Demazure polynomials.

(2) Coxeter and root system combinatorics: The idea that combinatorial objects associated to the symmetric group fit in a more general framework.

(3) Combinatorial representation theory: the Littelmann path model and applications to studying representations of $GL_n$ (and other Lie groups), Kazhdan-Lusztig polynomials and Hecke algebras.

The course will assume no prerequisites. The focus will be on combinatorial techniques.

Course requirements: Participants will select a research paper to present during the semester. The topic of the paper in algebraic combinatorics need not fall into (1)–(3) above.

Prerequisites: Graduate standing or consent of instructor.

Textbook: None.