

**Mathematics 996, Fall 2008 (Section #42820)**  
**Special Topics in Algebraic Combinatorics (3 credits)**

**Instructor:** Jeremy Martin (You can call me “Jeremy”)

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Office: 541 Snow Hall, (785) 864-7114

Office hours: By appointment (or just walk in)

**Meeting times:** Tue/Thu 11:00 AM – 12:15 PM in 408 Snow Hall

**Website:** <http://www.math.ku.edu/~jmartin/math996/>

**Course description:** This course will focus on Coxeter groups and their connections with research topics of current interest in combinatorics.

**Prerequisites:** Math 791 or permission of the instructor. Some knowledge of combinatorics (e.g., Math 724 or better yet my Math 796 course from Spring 2008) will be helpful, but I’ll try to make this course as self-contained as possible.

**Textbook:** Anders Björner and Francesco Brenti, *Combinatorics of Coxeter Groups* (Springer, Graduate Texts in Mathematics #231, 2005). We’ll cover chapters 1–3 and some subset of {3, 7, 8}, together with some material not in the text. You can access the full text of the book electronically via a link from the course website.

**Other useful books:**

- William Fulton, *Young Tableaux* (Cambridge, 1997). A good reference for representations of the symmetric group, and the geometry of Grassmannian, flag and Schubert varieties.
- James Humphreys, *Reflection Groups and Coxeter Groups* (Cambridge, 1990). The long-time standard text on Coxeter groups; the approach is more geometric and less combinatorial than Björner and Brenti’s book.
- Richard Stanley, *Enumerative Combinatorics*, volumes 1 and 2 (Cambridge, 1997/1999). The canonical reference on all things combinatorial.

**Course requirements:** Each student will carry out an individual project, consisting of reading a research article or the equivalent (I’ll provide a list of suggested articles) and giving a brief expository talk to the class. There will be no official homework or exams.

**Blatant shill:** Please also attend (and maybe enroll in) the Combinatorics Seminar (Wed 3:00–3:50, location TBA) and the Algebra Seminar (Tue/Thu 2:30–3:45, 408 Snow).