

Mathematics 996, Fall 2006 (Section #28327)
Special Topics in Combinatorial Commutative Algebra (3 credits)

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

E-mail: jmartin@math.ku.edu

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

Office hours: Tue 1:30–2:30, Wed 11:00–12:00, or by appointment

Meeting times: Tue/Thu 9:30 – 10:45 AM in 408 Snow Hall

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

Course description: This course will focus on topics of current interest spanning combinatorics, commutative algebra, and algebraic geometry. The main text will be *Combinatorial Commutative Algebra* by Ezra Miller and Bernd Sturmfels (Springer, 2004). You should already have received a copy of the book via e-mail.

Prerequisites: You should be comfortable with first-year graduate algebra and preferably have some experience with commutative algebra. The more familiar you are with things like free resolutions and Gröbner bases, the better. However, I will try to make the course as self-contained as possible.

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

References: Here is a list of other books that you may find useful:

- W. Bruns and J. Herzog, *Cohen-Macaulay Rings* (Cambridge, 1993)
- D. Eisenbud, *Commutative Algebra with a View to Algebraic Geometry* (Springer, 1995)
- W. Fulton, *Young Tableaux* (London Mathematical Society, 1997)
- A. Hatcher, *Algebraic Topology* (Cambridge, 2002), available free at <http://www.math.cornell.edu/~hatcher/AT/ATpage.html>
- R. Stanley, *Enumerative Combinatorics*, volumes 1 and 2 (Cambridge, 1997/1999)
- R. Stanley, *Combinatorics and Commutative Algebra*, 2nd edn. (Birkhäuser, 1996)
- B. Sturmfels, *Gröbner Bases and Convex Polytopes* (AMS, 1996)

Blatant shill: Please also attend (and maybe enroll in!) the Combinatorics Seminar (Wed 4:00–4:50, 558 Snow) and the Algebra Seminar (Tue/Thu 2:30–3:45, 408 Snow).