

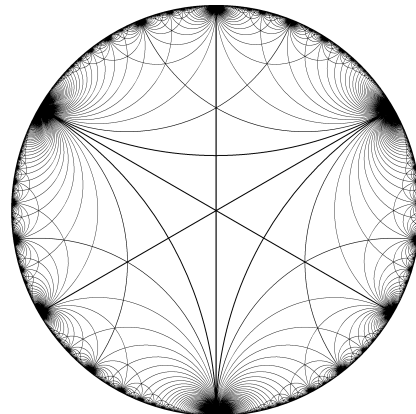
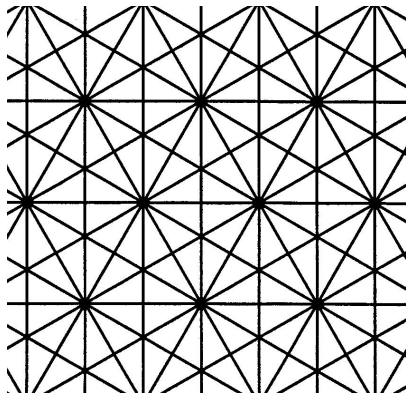
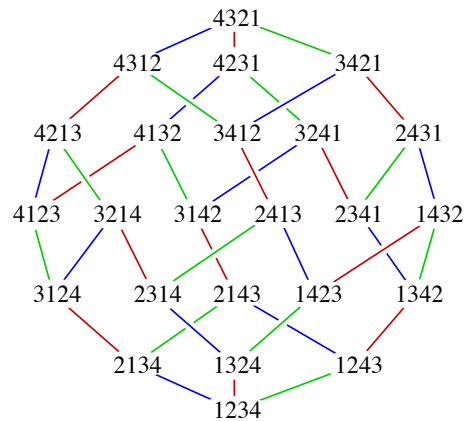
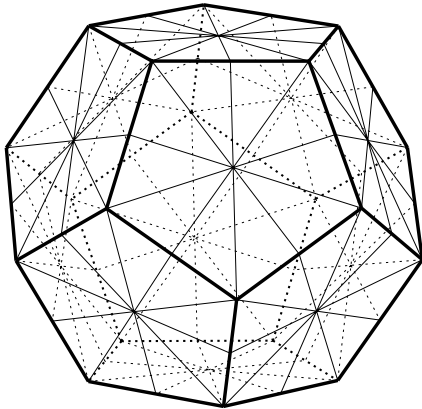
# MATH 3094: Honors (Special Topics) Math Scholars Course COMBINATORICS OF COXETER GROUPS

Fall 2018 – Tues/Thurs 3:30-4:45pm

A Coxeter group is a collection of “symmetries” that have properties similar to mirror reflections. The theory of Coxeter groups is a fundamental and active area of research, with a beautiful interplay of algebraic, combinatorial, and geometric ideas. The symmetric group, *i.e.*, permutations of  $n$  objects, is one of the most basic examples; many facts about its structure have interesting generalizations to more general Coxeter groups.

This course will provide an introduction to the theory of reflection groups and Coxeter groups from an algebraic combinatorial point of view. We will review necessary background from linear algebra and group theory and apply them to topics such as root systems, Bruhat order, reduced words, and classifications of finite reflection groups. While the course is primarily targeted at mathematics students, the subject matter would be of interest (and possible use) in the natural sciences.

After the basic material is covered, we will draw some connections to current research topics in algebraic combinatorics.



**Prerequisites:** A course in proof writing (Math 2710: Transition to Advanced Mathematics or Math 2141Q: Advanced Calculus or CSE 2500: Introduction to Discrete Systems) or permission by instructor. Enrollment requires instructor permission.

**Note:** The Math Scholars Course (MATH 3094) is a course for talented and engaged undergraduates, on a topic we do not cover in our regularly scheduled courses. The class carries honors credit, but it’s open to everyone.

**Questions?** Email the instructor, Emily Gunawan, at [emily.gunawan@uconn.edu](mailto:emily.gunawan@uconn.edu).