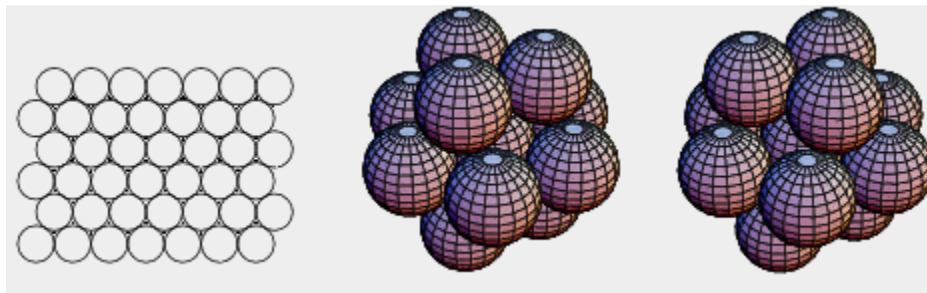




**Claremont McKenna College, Fall 2008**  
**MATH 149: Discrete Geometry**



**Instructor:** Lenny Fukshansky, Adams Hall 212, (909) 607 - 0014, lenny@cmc.edu  
**Time (tentative):** Mondays and Wednesdays, 1:15 – 2:30 pm

**Prerequisites:** MATH 32 and MATH 60. I am happy to talk to anybody interested in this course, and in particular to discuss if their background is sufficient.

**Text:** There is no textbook required. Typed lecture notes will be provided by the instructor.

**Course Description:** Suppose you want to pack oranges into a rectangular box so that the maximal possible number of oranges fit. How would you do it? Is there some special arrangement of oranges that allows packing more of them into a box than any other? This is a famous problem from Discrete Geometry, a branch of mathematics that is concerned with the geometric arrangement and properties of discrete sets of objects in space. The origins of Discrete Geometry go back to Johannes Kepler (1571 – 1630), who in 1611 proposed an answer to the problem of optimal packing of balls in a three-dimensional Euclidean space. Kepler's legendary conjecture has been proved only a few years ago. Discrete Geometry is an area of mathematics that stands at the intersection of discrete math, such as Number Theory, Lattice Theory, and Algebraic Geometry, and more analytically inclined branches of mathematics. It also provides a beautiful connection to some areas of Theoretical Computer Science, such as Complexity Theory and Algorithms, as well as to engineering and scientific applications. The goal of this course is to familiarize students with the basics of the subject, providing a glimpse at the fascinating interplay of continuous and discrete mathematics, as well as exhibiting connections to some fundamental branches of Computer Science. If time allows, we may also touch upon some application of Discrete Geometry to natural sciences and engineering.

**Grading:** Based on one take-home midterm and a final project. Homework problems will be suggested.

**Registration is open to students from all of the Claremont Colleges, and I will be happy to talk to anyone interested in this course!**