The geometry of numbers, PMath 940

   In this course we shall explore the basic properties of lattices in n-dimensional Euclidean space and lattice points in convex bodies. To Minkowski we owe the term "Geometry of Numbers", which describes the area, and the following result, which is known as Minkowski's theorem. If a convex body is centrally symmetric with respect to the origin and contains no point of a lattice besides the origin , then its volume is at most $2^n * \det L$. This is one of the basic results in the area and we shall consider some of its consequences. Other topics I hope to cover include covering minima, the Lenstra-Lenstra-Lovasz algorithm, the reduction of binary quadratic and cubic forms, the Leech lattice, sphere packing, the kissing number of spheres, heights of subspaces and Siegel's Lemma.
   The course will be self contained and accessible to beginning graduate students.

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