Topics in Discrete Mathematics

Nicholas Pippenger
Math 189B—Spring 2008

(Monday and Wednesday, 2:45–4:00)

Discrete mathematics enjoyed tremendous growth during the second half of the twentieth century. This growth was fueled by opportunities for applications in the fields of communication and computation, which were themselves expanding enormously during this period. But it was also aided by increasing interplay between discrete mathematics and other areas of mathematics, such as algebra, geometry, probability theory and harmonic analysis. This course will tour some of these developments in discrete mathematics, including detailed examination of some of the more accessible topics (such as error-correcting codes), and at least a remote view of some of the pinnacles of discrete mathematics (such as the work of Robertson and Seymour on graph minors). Mathematics 55 (Discrete Mathematics) is the only prerequisite; the bits of algebra, probability theory, *etc.* that we need will be developed from scratch. The topics covered in this course will be disjoint from those in Mathematics 106 (Combinatorics); both courses can be taken simultaneously if desired.