1023-D1-1700 **Jason Grout*** (grout@math.byu.edu), 292 TMCB, Department of Mathematics, Brigham Young University, Provo, UT 84602. *Exploring Graph Theory Using a Comprehensive Database of Graphs.*

I will describe a comprehensive database of small graphs that I built and show how the database can motivate and facilitate applications and exploration in graph theory. Recently updated and available freely both on the internet and now as an application on a student's personal computer, the database gives students instant access to hundreds of thousands of examples or counterexamples to possible relationships between graph properties. Instead of proving seemingly abstract relationships between graph properties, students can inductively conjecture relationships, such as the relationship between the existence of an Eulerian circuit and the degree sequence. The easily searchable database enables a student to immerse themselves in the discovery process and engage in a much more extensive exploration than previously possible. (Received September 26, 2006)