# Discrete Mathematics Seminar

Time:        Friday, 28 January 2011, 12:00–1:00 PM

Location:   238 Derrick Hall

Title:        Reductions and Cores of Edge Ideals of Graphs

Speaker:   Dr. Louiza Fouli, Department of Mathematics, New Mexico State University

Abstract:

Let $R$ be a Noetherian ring and let $I$ be an ideal. An ideal $J$ is a reduction of $I$ if $J \subset I$ and $I^{n+1} = JI^n$ for some nonnegative integer $n$. Northcott and Rees proved that if $R$ is a Noetherian local ring with infinite residue field then there are either infinitely many reductions of $I$ or the ideal is basic, i.e. it is the only reduction of itself. We focus on the class of square–free monomial ideals that are generated in degree 2. These correspond to edge ideals of graphs. Villarreal proved that when $I$ is the edge ideal of a tree or a graph with a unique odd cycle then $I$ is basic. We consider edge ideals of graphs with a unique even cycle and investigate various properties of their reductions. Finally we prove a formula for the core of a special subclass. This is joint work with Susan Morey.