MATH 480
Senior Seminar
Spring 2009

Date: April 1st, 2009

Speaker: Juliana Duncan, UNC Asheville

Title: *Group theory and chemistry*

Abstract: In mathematics a group, S, is a set of numbers, or in this case symmetry elements, with a set operation, $*$, *e.g.* addition, multiplication, *etc.*, in which the following properties hold:

i. S is closed under $*$.

ii. S contains an identity, that is if s is an element of S and 1 is the identity then $1 * s = s * 1 = s$.

iii. S contains an inverse operation, that is if s is an element of S then there exists s^{-1}, an element of S such that $s * s^{-1} = 1$.

iv. $*$ is associative.

Group theory is a field of mathematics that is widely applied in chemistry. The groups we will be examining consist of symmetry elements of molecules with the operation being composition. In this talk, we will show how group theory is applied to chemistry to define groups and some of group theory's applications in chemistry.