

# UCCS Mathematics

## Colloquium

Thursday December 1<sup>st</sup>, 2011

UC 307

12:30 pm – 1:30 pm

(Refreshments at 12:15 pm)

**Dr Ryan Schwiebert, Slippery Rock University**

### Faithful torsion modules and rings

Abstract: Call a right  $R$ -module  $M$  a "torsion module" if each element is annihilated by a nonzero element of the ring. When  $\text{ann}(M)$  is nonzero,  $M$  is trivially torsion, so we focus on the case when  $M$  is faithful (i.e.  $\text{ann}(M)=0$ ) and torsion. A ring admitting a right faithful torsion module is called "right FT" and an "FT rank" is defined as the minimum cardinality of a generating set for such a module for the ring. The characterization of FT rings among two major classes of rings (nonsingular and quasi-Frobenius), as well as a fundamental lemma on rings of infinite FT rank will be presented. Finally, we will examine rings with finite FT rank and the problems associated with finding rings of finite rank greater than 1.

