

## ***LOGIC SEMINAR***

**Guest Speaker: Ward Henson**  
**University of Illinois**

**Date:** Tuesday, April 16, 2019

**Time:** 2:00 PM

**Location:** 125 Hayes-Healy Hall



***Lecture Title:***

**Ultraproducts as a tool in the model theory of metric structures**

***Abstract***

Suppose  $L$  is a signature of continuous first order logic for metric structures and we have a class  $C$  of  $L$ -structures which we want to investigate from the point of view of model theory. In general, this involves letting  $T$  be the  $L$ -theory of  $C$ , and working to understand the models of  $T$  as fully as possible. This means not only knowing which  $L$ -structures are models of  $T$ , but also understanding the definable predicates and (especially important) the definable sets in models of  $T$ . (A valuable byproduct might be an explicit axiomatization of  $T$ .) In this talk we will lay out how understanding ultraproducts of members of  $C$  can be an important practical tool for understanding the full class of models of  $T$ . As much as time permits, we will discuss examples that have been successfully treated in this way, including some new ones, focusing on Banach spaces and Banach lattices. (Most of this work on examples is part of a collaboration with Yves Raynaud.)