Department of Mathematical Sciences
Faculty and Graduate Research Colloquium

"A fractal traveling salesman"
Dr. Vyron Vellis (University of Connecticut)

Thursday, February 7, 2019
1:00-1:50 p.m.
RB 449

Abstract: The traveling salesman problem, one of the most renowned problems in computer science, asks for the shortest path that passes through a given finite set of points in $\mathbb{R}^n$. More generally, given a (finite or infinite) set $E \subset \mathbb{R}^n$, when is it possible to construct a nice map (Hölder, Lipschitz) from the unit interval into $\mathbb{R}^n$ that contains E in its image? In this talk we discuss an extension of Peter Jones' traveling salesman construction, which provides a sufficient condition for E to be contained in a $(1/s)$-Hölder curve for $s \geq 1$. The original result, corresponding to the case $s = 1$, identified subsets of rectifiable curves. When $s \geq 1$, $(1/s)$-Hölder curves are more exotic objects than rectifiable curves that include fractal curves and space-filling curves as basic examples. This talk is based on joint works with Matthew Badger and Lisa Naples.