Speaker: Katie Brodhead (Florida A&M University)

Title: Reverse Mathematics of the Grätzer-Schmidt Theorem

Abstract: The Grätzer-Schmidt theorem of lattice theory states that each algebraic lattice is isomorphic to the congruence lattice of an algebra. A lattice is algebraic if it is complete and generated by its compact elements. We study the reverse mathematics of this theorem. We also show that: the set of indices of computable lattices that are complete is  $\Pi_1^1$  complete; the set of indices of computable lattices that are algebraic is  $\Pi_1^1$  complete; the set of compact elements of a computable lattice is always  $\Pi_1^1$  and can be  $\Pi_1^1$ -complete; and the set of compact elements of a distributive computable lattice is always  $\Pi_3^0$  and can be  $\Pi_3^0$ -complete.

Keywords: lattice theory, computability theory

This is joint work with Mushfeq Khan (University of Hawai'i at Mānoa), Bjørn Kjos-Hanssen (University of Hawai'i at Mānoa), William Lampe (University of Hawai'i at Mānoa), Paul Nguyen (University of Hawai'i at Mānoa), and Richard Shore (Cornell University).