**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 $\Pi^0_3$ and can be $\Pi^0_3$-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).