Title: Introduction to Genus Theory

Abstract: The ideal class group of an algebraic number field is a mysterious object in general. However, in certain situations, genus theory gives some nontrivial information about the structure of that group. This topic has its origin in the Disquisitiones Arithmeticae of Gauss. The results of Gauss concern binary quadratic forms, but can be translated to statements about ideal class groups of quadratic fields. We discuss this first, and then generalizations to cyclic extensions of number fields.

Genus theory will be useful in my second talk (two weeks later), the title of which is: Does 37 divide the class number of $\mathbf{Q}(\sqrt[37]{37})$?