Title: Iwasawa theory and BSD for modular forms

Abstract: The classical conjecture of Birch and Swinnerton-Dyer predicts that the rank of an elliptic curve over $\mathbf{Q}$ is equal to the order of vanishing of its $L$-function at 1. This conjecture has been rephrased in cohomological terms and applied to more general contexts. For example, if $f$ is a modular form, the generalized conjecture predicts that the order of vanishing of the $L$-function $L(f, s)$ at its central point is equal to the rank of a Selmer group attached to $f$. I will describe an Iwasawa-theoretic method for proving that the order of vanishing of $L(f, s)$ at its central point is positive if and only if the appropriate Selmer group has positive rank. This method has been carried out for modular forms with CM, but the general case depends on several conjectures.